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Leaning On One Another: An Exploration Of The Relationship Among Social Connection, Alcohol Use, Resilience, And Loneliness In Lgbtq+ College Students

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**LEANING ON ONE ANOTHER: AN EXPLORATION OF THE RELATIONSHIP
AMONG SOCIAL CONNECTION, ALCOHOL USE, RESILIENCE, AND LONELINESS
IN LGBTQ+ COLLEGE STUDENTS**

A Dissertation

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Doctor of Philosophy

by Wesley Nathaniel Mason

March 2021

**LEANING ON ONE ANOTHER: AN EXPLORATION OF THE RELATIONSHIP
AMONG SOCIAL CONNECTION, ALCOHOL USE, RESILIENCE, AND LONELINESS
IN LGBTQ+ COLLEGE STUDENTS**

by

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To the seekers of Truth, hope, and justice- to the ones who are beacons of light for others in their darkest hours- this is for you.

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TABLE OF CONTENTS

| | |
|--|----|
| CHAPTER 1- BACKGROUND AND RATIONALE | 2 |
| Theoretical Background..... | 3 |
| The Impact of Minority Stress | 4 |
| Social Connectedness..... | 5 |
| Resilience..... | 6 |
| Rationale for the Study | 8 |
| Focusing on College Students..... | 8 |
| LGBTQ+ College Student Stressors and Mental Health Concerns | 9 |
| Substance Use Among Heterosexual vs. LGBTQ+ College Students | 10 |
| Social Connection in LGBTQ+ College Students | 11 |
| Resilience in LGBTQ+ College Students | 12 |
| Loneliness and COVID..... | 12 |
| Rationale for Connection | 13 |
| Definitions..... | 13 |
| Methodology | 14 |
| Research Questions | 15 |
| Participants..... | 16 |
| Instruments..... | 16 |
| Ethical Considerations | 17 |
| Summary | 17 |
| CHAPTER TWO- LITERATURE REVIEW | 19 |

| | |
|---|----|
| The Role of College as a Social Institution | 19 |
| College Students and Mental Health Concerns | 20 |
| Current Demographic Information and Implications..... | 22 |
| The Impact of Minority Status on Mental Health Outcomes..... | 23 |
| Substance-Use Among College Students..... | 26 |
| Risk Factors for Substance Use in College Students | 27 |
| The Impact of Drinking | 29 |
| Risk Factors for Binge Drinking..... | 30 |
| Connection Between Mental Health and Drinking..... | 32 |
| The Influence of Connection to Others..... | 34 |
| The Relationship Between Drinking and Resilience | 36 |
| Sexual Minority Students and College Student Development..... | 37 |
| Experiences of LGBTQ+ College Students..... | 38 |
| The Impact of Campus Culture..... | 39 |
| The Role of Minority Stress..... | 42 |
| Mental Health Outcomes | 43 |
| The Impact of Social Environment on Mental Health Outcomes..... | 44 |
| Drinking and Mental Health in the LGBTQ+ Community..... | 47 |
| Drinking in the LGBTQ+ Population | 48 |
| Drinking Among LGBTQ+ College Students | 50 |
| Social Connectedness in LGBTQ+ College Students..... | 55 |
| Social Connectedness and Drinking in LGBTQ+ Students..... | 56 |
| Resilience in LGBTQ+ College Students..... | 61 |

| | |
|--|----|
| Resilience and Social Connectedness | 63 |
| Resilience and Drinking..... | 64 |
| The Impact of Loneliness..... | 66 |
| COVID-19..... | 68 |
| Rationale for Conducting Study..... | 68 |
| Initial Research Design | 69 |
| CHAPTER THREE- METHODOLOGY | 71 |
| Rationale for Method | 72 |
| Sample Size Determination..... | 73 |
| Methodology | 74 |
| Model Specification | 74 |
| Model Identification..... | 75 |
| Model Estimation..... | 75 |
| Test of Fit..... | 76 |
| Re-specification of the Model..... | 76 |
| SEM Fit Indices | 76 |
| Sampling Procedure | 78 |
| Data Collection | 81 |
| Measures | 83 |
| General Demographic Questionnaire..... | 83 |
| SCS-R | 83 |
| Psychometric Properties of the SCS-R | 84 |
| BRS..... | 85 |

| | |
|---|-----|
| Psychometric Properties of the BRS | 85 |
| UCLA-R..... | 86 |
| Psychometric Properties of the UCLA-R | 86 |
| AUDIT | 87 |
| Psychometric Properties of the AUDIT | 87 |
| COVID-19 Phobia Scale..... | 87 |
| Primary Research Questions | 88 |
| Exploratory Research Questions..... | 89 |
| Statistical Analysis- Structural Equation Modeling..... | 89 |
| Correlations..... | 90 |
| Statistical Assumptions of Correlations..... | 91 |
| One-Way Multivariate Analysis of Variance | 91 |
| Statistical Assumptions of MANOVA..... | 92 |
| SUMMARY | 92 |
| CHAPTER FOUR: DATA RESULTS | 93 |
| Sampling and Data Collection Procedures | 94 |
| Data Screening..... | 97 |
| Statistical Assumptions..... | 99 |
| Descriptive Statistics..... | 100 |
| Participant Characteristics | 100 |
| Structural Equation Modeling..... | 104 |
| Measurement Models..... | 105 |

| | |
|---|-----|
| Social Connectedness Scale-R (SCR-R)..... | 105 |
| Confirmatory Factor Analysis of SCS-R | 106 |
| UCLA Revised Scale (UCLA-R)..... | 110 |
| Confirmatory Factor Analysis of UCLA-R | 111 |
| The Brief Resilience Scale (BRS)..... | 115 |
| Confirmatory Factor Analysis for the BRS | 116 |
| Alcohol Use Disorders Identification Test (AUDIT) | 118 |
| Confirmatory Factor Analysis of the AUDIT | 119 |
| Structural Model | 123 |
| Results of Structural Equation Model..... | 124 |
| Model Re-specification..... | 126 |
| Results of Modified Structural Equation Model..... | 126 |
| Post-Hoc Multiple Linear Regression Analyses | 129 |
| Differences in Scores Between Participants | 131 |
| Correlation of Constructs | 133 |
| Summary | 135 |
| CHAPTER FIVE- DISCUSSION..... | 136 |
| Discussion of Primary Research Findings | 139 |
| Discussion of Findings Related to Social Connectedness | 141 |
| Social Connectedness a Predictor of Hazardous Drinking | 141 |
| Social Connectedness as a Predictor of Resilience..... | 142 |
| Social Connectedness as a Predictor of Loneliness | 143 |
| Discussion of Findings Related to Resilience and Drinking | 144 |

| | |
|---|-----|
| Resilience as a Mediating Variable Between Connectedness and Drinking | 145 |
| Discussion of Results Related to Loneliness and Drinking | 146 |
| Loneliness as a Mediating Variable Between Connectedness and Drinking..... | 147 |
| Regression Analyses | 148 |
| Social Connectedness as a Significant Predictor of Resilience | 149 |
| Social Connectedness and Levels of Drinking | 149 |
| Loneliness and Resilience as Non-mediators | 150 |
| Discussion of Exploratory Research Questions | 151 |
| Differences in Levels of Social Connectedness..... | 152 |
| Differences in Levels of Resilience | 153 |
| Differences in Loneliness | 154 |
| Differences in Levels of Drinking | 155 |
| Differences in COVID-Related Anxiety..... | 157 |
| Correlations Between COVID and other Constructs | 157 |
| Discussion of the Proposed Model | 158 |
| Limitations | 160 |
| Implications for Clinicians and Higher Education Faculty..... | 162 |
| Recommendations for Future Research | 166 |
| Conclusion | 167 |
| APPENDICES | 169 |
| Appendix A: Original Structural Model | 170 |
| Appendix B: Email for Participant Recruitment..... | 172 |
| Appendix C: Informed Consent | 174 |

| | |
|---|-----|
| Appendix D: SCS-R (Lee et al., 2001) | 177 |
| Appendix E: UCLA-R (Russell et al., 1980) | 179 |
| Appendix F: BRS (Smith et al., 2008) | 181 |
| Appendix G: AUDIT (Daeppen et al., 2000) | 183 |
| References | 186 |
| Vitae | 213 |

LIST OF TABLES

| | |
|---|-----|
| Table 1: Description of Fit Indices | 78 |
| Table 2: Demographic Characteristics of Total Participant Sample..... | 102 |
| Table 3: Demographic Characteristics for LGBTQ+ identifying Participants..... | 103 |
| Table 4: Fit Indicators for SCS-R..... | 110 |
| Table 5: Fit Indicators for UCLA-R..... | 115 |
| Table 6: Fit Indicators for BRS..... | 118 |
| Table 7: Fit Indicators for AUDIT..... | 120 |
| Table 8: Mediation Analysis | 130 |
| Table 9: Mediation Analysis..... | 130 |
| Table 10: Multivariate Analysis of Variance (MANOVA) Results..... | 132 |
| Table 11: Mean Scores Between Participants by Sexual Orientation..... | 133 |
| Table 12: Means, Standard Deviations, and Correlations..... | 134 |

LIST OF FIGURES

| | |
|---|-----|
| <i>Figure 1.</i> Hypothesized structural model..... | 104 |
| <i>Figure 2.</i> Initial CFA for SCS-R with standardized output..... | 108 |
| <i>Figure 3.</i> Final CFA for SCS-R with standardized output..... | 109 |
| <i>Figure 4.</i> Initial CFA for UCLA-R with standardized output..... | 113 |
| <i>Figure 5.</i> Final CFA for UCLA-R with standardized output..... | 114 |
| <i>Figure 6.</i> Initial and final CFA for BRS with standardized output..... | 117 |
| <i>Figure 7.</i> Initial CFA of the AUDIT with standardized output..... | 121 |
| <i>Figure 8.</i> Final CFA for AUDIT with standardized output..... | 122 |
| <i>Figure 9.</i> Initial Structural Equation Model for research hypothesis..... | 125 |
| <i>Figure 10.</i> Re-specified Structural Model of research hypothesis | 128 |

**LEANING ON ONE ANOTHER: AN EXPLORATION OF THE RELATIONSHIP
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IN LGBTQ+ COLLEGE STUDENTS ABSTRACT**

This research study served to examine casual inferences within the relationships between social connectedness, drinking, resilience, and loneliness for both LGBTQ+ and heterosexual-identifying college students. The literature reviewed identified there is likely a relationship between these constructs whereby social connectedness was expected to significantly predict drinking (in a negative direction), and the relationship was mediated by the presence of resilience or loneliness. A total of 253 full-time college students between the ages of 18 and 28 were surveyed, 135 of which identified as LGBTQ+. The participants completed the Social Connectedness Revised (SCS-R), revised version of the UCLA Loneliness Scale (UCLA-R), the Brief Resilience Scale (BRS), the Alcohol Use Disorders Identification Test (AUDIT), and a subscale of the COVID-19 Phobia Scale. An SEM was used to suggest that social connectedness was predictive of drinking for only a subset of the original drinking scale and that neither resilience nor loneliness mediated the relationship. However, the model indicated that it is an acceptable fit for the population. Differences in mean scores for the scales were also reviewed in addition to correlations between the constructs. Limitations, implications for professionals, and suggestions for future research are also discussed.

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Leaning on One Another: An Exploration of the Relationship Among Social Connection,
Alcohol Use, Resilience, And Loneliness in LGBTQ+ College Students

CHAPTER 1- BACKGROUND AND RATIONALE

Sometimes our light goes out but is blown again into flame by an encounter with another human being. Each of us owes the deepest thanks to those who have rekindled this inner light.

-Albert Schweitzer

Our world is filled with the need for connection. We are on an ever-changing journey to seek strong connections with others and ourselves. Many addiction counselors and individuals who have undergone their own journey to sobriety claim that connection to others is the antidote to addiction (“The Social Connection Theory”, 2020). New York Times best-selling author Johann Hari gave a TED talk and wrote a book on how connecting with others helps those in recovery from addiction maintain sobriety (Hari, 2015). The cultural shift is becoming apparent to the helping profession and the clients we work with- there is a power in authentically interacting and getting meaningful feedback from other human beings when we are in the darker nights of our soul. This connection and how it helps protect against substance abuse warrants further exploration.

In this first chapter of my study, I introduce a theoretical background supporting the hypothesized relationship between social connectedness, resilience, drinking behaviors, and loneliness for LGBTQ+ college students. A theoretical framework including Meyer’s (2003) minority stress hypothesis, as well as literature supporting the benefits of social connection as a preventative measure to mitigate problematic drinking in sexual minority students will be included to guide the study. I also review theories of resilience in historically marginalized populations to support my assertion on the mediating effect of resilience in the relationship between social connectedness and drinking for this group. I provide a brief overview of seminal literature that summarizes and synthesizes key findings in stressors for sexual minority students.

Additionally, current literature is presented on how sexual minority students engage with alcohol, how this drinking impacts their sense of connectedness to others, and how factors of resilience mediates this particular relationship. Finally, I touch on the impact of loneliness on drinking for LGBTQ+ students as well as navigating relationships during the COVID-19 pandemic.

I argue the case as to why this research is an important topic by situating my anticipated design and theoretical framework in light of previously published research. After the purpose and need for the study is explained, I present the anticipated research questions. Then, I provide an overview of structural equational modeling design regarding why that particular research design was employed. Next, participant characteristics, recruitment procedures, screening, eligibility, and desired number of participants needed for statistical rigor is discussed. Then, I give an overview of ethical considerations that must be considered when conducting the study. I discuss the feasibility of the proposed study and provide a list of key definitions that will help the reader understand the constructs and related measures being evaluated. Finally, I evaluate and review relevant parameters to the study given the chosen design.

Theoretical Background

I identify and explain the rationale in using: (a) Minority Stress Theory, (b) theories of social connectedness, (c) the role of resilience in health outcomes among sexual minorities, and (d) how loneliness and COVID-19 relate to drinking as a coping mechanism for LGBTQ+ students. First, I provide an overview of important literature substantiating each theoretical approach. Next, I discuss summaries of key points related to each construct in light of the methodology and rationale for the study.

The Impact of Minority Stress

Every day stressors are certainly a part of our human experience (Meyer, 2003; Meyer, 2015). These stressors are compounded and often amplified for individuals identifying as part of a historically marginalized population. Minority stress differs from regular stressors in that these stressors are largely the result of being part of a marginalized status or group, including the LGBTQ+ population. Put differently, minority stress is considered unique in addition to cumulative stress that is often experienced by humans from all walks of life (Meyer, 2003). Members of the LGBTQ+ community, for example, are forced to adapt to excess stressors in ways that individuals from the majority population are not- including social expectation, ways of being around others, and how to navigate relationships. These stressors are considered to be chronic, meaning they are relatively stable given the barriers in social and cultural institutions that persist over time. When parsing out minority stress from general, every-day stressors, minority stressors inherently stem from social processes- institutions, structures, and dynamics that are outside of the individual and are more socially-based than biological, genetic, or metabolic stressors (Meyer, 2003; Meyer, 2005).

Stigma, prejudice and discrimination that is regularly experienced by marginalized populations, particularly the LGBTQ+ community, inherently create hostile social environments that causes detrimental mental health among sexual minority individuals (Meyer, 2003). These hostile environments are associated with greater substance use, depressive symptoms and suicidal ideation (Meyer, 2003). Other processes that result include concealment of sexual identity, feelings of rejection, and maladaptive coping mechanisms outside of simply substance use. As Meyer (2003) noted based on research, coping and social support can benefit the health outcomes of LGBTQ+ individuals and ameliorate the impact of minority stressors on mental

health outcomes in particular. The literature review and analysis provided by Hughes et al. (2016) emphasized the link between minority stressors and alcohol, particularly using alcohol as a maladaptive coping mechanism and a means to cope with the negative feelings and impacts from minority stressors.

Social Connectedness

Social connectedness has been defined as an attribute of the self that reflects cognitions of long-lasting closeness with others in their social world. In other words, social connectedness can be thought of as an overarching cognitive structure that encompasses patterns of interpersonal relations (Lee et al. 2001; Lee & Robbins, 1998). The benefits of social connectedness as a mediator of stress have been noted in studies for the past few decades. For example, Cohen and Willis (1985) noted that the support is particularly beneficial when there is a *perception* of actual support and that perception matches the needs of individuals based on their current stressors. Overall, connectedness to others (i.e. social connectedness) broadly increases resources of resilience and creates positive health outcomes (Szymanski & Gonzalez, 2020).

Social connectedness has a number of positive benefits in the lives of sexual minorities, including mitigating the effect of internalized homophobia (Sanscartier & MacDonald, 2019), concealing one's LGBTQ+ identity (Morandini et al., 2015), and decreasing the likelihood of poor mental health outcomes (Morandini et al., 2015). Using a minority stress theory framework, each of these unique stressors can lead to problematic substance-use as a way to cope or other poor mental health outcomes (Meyer, 2003). DiFulvio (2011) utilized life-story methodologies for twenty-two participants between the ages of 14 and 22. The author was interested in finding the outcomes of individual connection and LGBTQ+ affiliation (e.g. aspects of social connectedness) on the lives of the interviewees, specifically ways in which social connection

contributed positively to their lives. DiFulvio (2011) found that social connectedness significantly contributed to affirming individual development of a solid LGBTQ+ identity, finding like-minded individuals to form bonds with, cultivating a sense of agency and empowerment in LGBTQ+ related advocacy and fostering community relationships.

Kidd et al. (2018) noted that among sexual and gender minority youth, feeling included in their environments as well as peer and parental support all at least partially mediated the risky use of substances in a meta-analysis of previous research. The presence of a supportive network and feeling a sense of belonging helped facilitate a healthier relationship with substances than those without supportive networks (Kidd et al., 2018) Thus, the research is clear that social connectedness appears to lead LGBTQ+ youth and young adults to more beneficial and adaptive mental and physical health outcomes.

Resilience

Resilience refers to the ability to be able to survive and adapt in the face of adversity, including minority stressors as well as general stressors and traumatic life-events (Meyer, 2015). Examples of core constructs found in resilience includes social support, positive coping skills (Meyer, 2015), and personality traits that are considered adaptive to maintain flexibility in the face of adverse circumstances (Livingston et al., 2016). Traits or behaviors associated with resilience mitigate the effects of stress, including poor health outcomes. The presence of resilience indicates that the individual not only attempted to adapt to stress in a particular way, but successfully withstood the negative effects of stress (Meyer, 2015). However, it is worth noting that successfully adapting to stress is different than thriving, as additional research has contended thriving is a different concept warranting particular exploration (O’Leary & Ickovics, 1995).

Meyer (2015) notes the importance of individual sources of resilience, which include traits and behaviors inherent to a person that gives them a sense of agency to deal with stress successfully as well as community sources of resilience, which includes formal and informal forms of social support. The individual traits include personality traits (such as openness to new experiences) as well as a different locus of control, sense of helplessness, and level of fatalism than an individual who more easily succumbs to the negative impacts of stress (Meyer, 2015). Community resilience, on the other hand, infers support from like-minded others in bolstering the ability of individuals to develop and maintain a sense of well-being (Hall & Zautra, 2010). Additionally, Meyer (2015) includes the presence of tangible and intangible resources, community role-models, certain norms and values, and avenues of direct social support as aspects of community resilience among LGBTQ+ individuals.

It's important to note that changes in policies and legislature can significantly impact the sense of community experienced by LGBTQ+ individuals via the presence of minority stress that results from legal oppression or lack of basic freedom (Meyer, 2015; Pachankis, 2014). For example, Pachankis et al. (2014) identified that increased alcohol use among sexual minorities is one of the lingering effects of structural barriers, including living in states with anti-LGBTQ+ legislature regarding rights to marry. Moreover, gay men who were more fearful of rejection in based on past experiences of victimization or who live under the reality of legislature that does not support LGBTQ+ human rights were more likely to drink alcohol. Thus, it is important to note the tie between systemic oppression that cultivates minority stressors and the notion of resilience in the LGBTQ+ community to depict a more nuanced understanding of how resilience is manifested and fostered.

Based on the literature reviewed, I incorporated resilience measures that includes items related to the ability to bounce back or recovery from stress (Smith et al., 2008). This is important given that the I am proposed mediating model where levels of social connectedness predicts drinking behaviors; however, social connectedness impacts the presence of resilience and resilience in turn impacts drinking. I hypothesized that resilience factors impact the ability of sexual minorities' ability to successfully navigate and overcome the negative effects of stress. Moreover, there appears to be a relationship between resilience factors, social supports, and negative effects of minority stress, including alcohol use, for sexual minorities. Below, I justified the need for the study and for why this issue is both important and currently under-researched within sexual minority student populations.

Rationale for the Study

This section describes the rationale for the study's (a) focus on college students, (b) specific focus on sexual minority students, (c) substance use among sexual minority vs. sexual majority college students, (d) the role of social connection in the lives of LGBTQ+ college students, (e) how resilience impacts drinking behaviors and connection with others for sexual minority college students, and (f) the role of loneliness and COVID-19 related anxiety given the current pandemic.

Focusing on College Students

Enrollment of college students has steadily increased since the past few decades (Ford and Blumenstein, 2013; NCES, 2019). Due the role of higher education in career attainment and promotion, as well as the dearth of career opportunities for those with only a high school degree, a college education has become almost a necessity for modern young adults (Ford & Blumenstein, 2013). Because so many adults undergo all or part of a college education at some

point in their lives for career advancement, college students have become the focus of a large body of research. These topics of interests include motivational factors, substance use, stressors unique to the college experience, student development theory including socialization and identity development, and career readiness (Ford & Blumenstein, 2013). Given the aforementioned reasons, it is reasonable to justify continued research among the college student population. Moreover, the research foci, including stressors, mental health needs, and substance use behaviors of college student can provide an analysis of ways counselors can better serve college-student clients, particularly those who identify as LGBTQ+ or from other marginalized backgrounds.

LGBTQ+ College Student Stressors and Mental Health Concerns

Historical and societal institutional barriers significantly impact young adults outside of college settings and are still a reality for many marginalized students. While mental health concerns are growing regarding the frequency and severity of cases in college campuses broadly (Hunt & Eisenberg, 2010; NSCSCC, 2014), LGBTQ+ college-students are a particularly vulnerable population regarding susceptibility to poor mental health outcomes (Peter & Taylor, 2014; Woodford et al., 2014). Sexual minority students are more likely to experience higher rates of discrimination (Woodford & Kulick, 2015), anxiety, depression, suicidal ideation, and feelings of being a burden to others than their heterosexual counterparts (Silva et al., 2015). Heterosexist harassment and being discriminated against are both significant predictors of lower satisfaction with academics and a lower desire to remain enrolled at a current institution. According to Morris and Trent (2019), sexual minority students were significantly more likely to drop out or transferring schools as a result of these negative stressors.

Among cis-gendered LGBTQ+ participants, both blatant (e.g. verbal harassment) and subtle (e.g. microaggressions) heterosexism is associated with an increased risk of suicide and depression (Woodford et al., 2014). Socially based stressors (i.e. minority stressors unique to sexual minorities) also predict non-injurious self-harming among sexual-minority college students (Blossnich & Bossarte, 2012). Busby et al. (2020) noted that victimization and harassment was also related to not just the presence of, but the *severity* of both depression and suicidal ideation in sexual minority students. Therefore, based on the presented literature, it is evident that sexual minority college students are at a higher risk than their heterosexual counterparts to experience painful, life-changing, and socially-based stressors that impact various facets of their well-being on campus.

Substance Use Among Heterosexual vs. LGBT+ College Students

Because the median age-group attending college is at a developmental stage where experimentation in many aspects of social life is common, (Arnette, 2000), substance use among college students, including drinking and related behaviors is rampant. College students appear to have certain substance-use behaviors that are unique to their social experiences on campus (Vander Ven, 2011). These social expectations include wanting to belong, undergoing certain rites of passage, and social solidarity and support after having a negative experience from drinking (Vander Ven, 2011). Interestingly, even when controlling for the same age-group, college-students drink at rates much higher than non-college students of the same age. College students are also more likely to develop alcohol abuse or dependence compared to their non-college-attending counterparts (Carter et al., 2010).

In Longerbeam et al.'s (2007) study, sexual minority students, particularly gay men, were more likely to drink despite their perceptions of having mostly positive academic and social

experiences. Additionally, higher rates of drinking were also found in sexual minority women (SWM; Dworkin et al., 2018). In general, sexual minority students were more likely to drink frequently and/or have negative consequences with their drinking (Woodford et al., 2012). Additionally, drinking was used as a coping mechanism to likely deal with minority stressors, including perceived subtle and overt discrimination as a result of their minority status. (Hatzenbuehler et al., 2011; Winberg et al., 2019).

Social Connection in LGBTQ+ College Students

Social connectedness is a fundamental part of campus life for all college students. While academic achievement is a predecessor of achieving later financial and career success (Ford & Blumenstein, 2013), research has also focused on college students' experiences with social inclusion, belonging and engaging in activities with others. For example, many student development theories have highlighted the importance of cultivating meaningful friendships, forming identities, and beginning and maintaining romantic relationships during this period of young adulthood (Arnette, 2000; Chickering & Reisser, 1993). Social connection, however, looks different for those with marginalized identities and backgrounds. This is the case for LGBTQ+ college-students as it for racial, cultural, ethnic, and religious minorities. Social connection provides a way for LGBTQ+ individual to feel empowered and validated in their identity (Erosheva et al., 2015; Zeman et al., 2017), and is an important facet of sexual-minority college student-life (DiFulvio, 2011). It is reasonable to assert that, given these benefits of social connectedness for LGBTQ+ students, which will be covered in more depth in Chapter Two, certain unhealthy coping strategies, including hazardous drinking, are less likely to occur when students feel connected to others.

Resilience in LGBTQ+ College Students

Resilience, as noted earlier, involves the ability to both thrive and adapt while enduring adversity, including both everyday stressors, and more specific forms of adversity such as minority stressors (Meyer, 2015). The ability to process through and grow from adverse events has been found to be inherent in certain personality traits (Livingston et al., 2016; Meyer, 2015), as well as using forms of social support as a buffer against isolation and negative coping (Aleesi et al., 2017). Resilience has overall been found to be a mediating factor in the relationship between experiencing minority stress and drinking (Livingston et al. 2016). Additionally, group involvement and relationships with others can act as protective factors for sexual minorities, highlighting the connection between social connection and resilience (Mancini, 2012).

Loneliness and COVID

LGBTQ+ college students are more likely to feel less socially supported than their heterosexual peers at the same institution (Christie, 2020; DiFulvio, 2011). Research has shown that social isolation is related to not only feelings of loneliness, but disconnection to others. Additionally, heterosexual students overall display higher levels of psychological well-being and support compared to LGBTQ+ students (Lewis et al., 2016; Salerno et al., 2020). Additionally, even when some students are connected to others, the quality of their connections might not provide the kind of support that close friendships often do, even when students are engaged in academic and social organizations (Longerbeam et al., 2007). It is also worth noting that this current study also occurred during the COVID-19 pandemic. While little is known about the lasting effects of the COVID-19 pandemic on LGBTQ+ individuals, their mental health outcomes have deteriorated at alarming rates (Gonzales et al., 2020). Given the context of the current global health crisis, I chose to see how COVID-19 related anxiety might differ between

sexual minority vs. heterosexual students, as well as how the construct relates to the other measures.

Rationale for Connection

Sanlo (2004) enumerated three specific themes that warranted further research based on an extensive literature review. These themes involved exploration of the lives of LGBTQ+ college students. Sanlo (2004) identified the following themes: a) discrimination and coping, which included anti-gay rhetoric that causes such outcomes as social isolation; b) health outcomes/effects –including emotional and physical health (i.e. such as substance use and other mental health concerns); and c) resilience and protective factors, such as community involvement, that helps build coping strategies and feelings of thriving and surviving in the face of adversity. The author makes the argument that such research is important for purposes of retention data and when assisting college students broadly (Sanlo, 2004). Moreover, I argue that the literature on sexual minority student substance use, social connectedness and how the relationship between those two constructs is likely mediated by factors of resilience and/or the presence of loneliness. Given the aforementioned literature and the subsequent explanations pertaining to each construct in Chapter Two, I make the assertion that not only is connectedness predictive of drinking for LGBTQ+ students, but that resilience and loneliness explain the pathway between these two constructs.

Definitions

Gender identity- A person's innermost concept of self as male, female, a blend of both or neither- how individuals perceive themselves and what they call themselves. A person's gender identity can be the same or different from their sex assigned at birth.

Heterosexism- A systematic that denial and stigmatization of any non-heterosexual form of behavior, identity, relationship, or community (Herek, 1990).

LGBTQ+- This is an acronym for “lesbian, gay, bisexual, transgender and queer (Human Rights Campaign [HRC] , 2020).

Sexual orientation- An inherent and enduring emotional, romantic or sexual attraction to other people (HRC, 2020).

Transgender- A broader term for people whose gender identity and/or expression is different from cultural expectations based on the sex they were assigned at birth. This term does not refer to sexual orientation (HRC, 2020).

Victimization- A term for an individual’s direct and indirect experience of physical, emotional, and/or psychological harm committed by an offender (Toggia, 2014).

Methodology

For this study, I have chosen quantitatively evaluate the relationships between known measures pertaining to social connectedness, drinking behaviors, and the mediating role of resilience and loneliness for sexual minority students. The literature thus far has been able to describe the impact of minority stressors, how social isolation impacts LGBTQ+ students, and how feelings of resilience provide a protective buffer against minority stressors. However, to date, there is not one study that highlights and investigates the relationship between these four constructs, either quantitatively or qualitatively. Notably, the research also indicates the connections can either be supportive and lead to higher levels of resilience, or if the connections do not feel as supportive or close, increased feelings of loneliness (Schmidt et al., 2011; Woodford et al., 2015). Because enough qualitative literature exists pertaining to the lived experience of minority stressors, resilience factors, and relationship with alcohol for LGBTQ+

students (e.g. DiFulvio, 2011), a quantitative approach is warranted to evaluate the strength, direction, and mediating influences of the hypothesized relationship between these constructs. To that end, Fassinger (1987) describes the benefits of using structural equation modeling (SEM; Fassinger, 1987) in counseling-related research. SEM allows researchers to make inferences for causal patterns between unobserved variables, psychometrically evaluate data measures, and enhances the ability of correlational data to explain relationship between constructs (Fassinger, 1987).

Research Questions

The following research questions were explored in this study based on the literature pertaining to the experiences of LGBTQ+ students and the socially-based stressors that they experience.

1. Will LGBTQ college students' degree of social connectedness (as measured by SCS-R; Lee et al., 2001) predict their level of alcohol use (as measured AUDIT- Daeppen et al., 2000)?
2. Is the relationship between social connectedness (as measured by the SCS-R; Lee & Robbins, 1995) and level of alcohol use (as measured by the AUDIT; Daeppen et al., 2001) of LGBTQ+ college students mediated by their levels of trait resilience (as measured by the BRS; Smith et al., 2008)?
3. Is this relationship between social connectedness and level of alcohol use mediated by feelings of loneliness (Russell et al., 1980)?
4. I also used regression to confirm the statistical power of the SEM analysis. Thus, I use confirmation analyses for the question of 'Whether social connectedness predicts

alcohol use and whether this relationship was mediated by resilience and/or loneliness?’

The following exploratory questions were also studied:

- a. Was there a statistically significant difference between LGBTQ+ participants and heterosexual participants on the constructs investigated in the study?
- b. What was the relationship between COVID anxiety and the other constructs, as well as the relationships between each construct?

Participants

I primarily recruited participants through online with list-serves of universities that provide geographical diversity, representation of various student populations, and are feasible for regarding travel if needed. Participants were recruited online due to the COVID-19 pandemic (Towsend et al., 2020). Qualtrics was used to build the overall survey, design the questionnaire format, and solicit demographic information. Subjects were asked to complete the survey that I created. They ranged in age from 18 to 28 years old. Screener questions were included at the beginning of the survey to determine eligibility of the study in order to participate. Additionally, participants were given an IRB-approved introduction to the study as well as an informed consent explaining their rights as a participant, including confidentiality.

Instruments

The instruments that were used in this study are the following: (a) *The Social Connectedness Scale – Revised* (SCS-R; Lee & Robbins, 1995); (b) the *UCLA Loneliness Scale* (UCLA-R; Russell et al., 1980) (b) the *Brief Resilience Scale* (BRS; Smith et al., 2008); and (c) *the Alcohol Use Disorders Identification Test* (AUDIT; Daepfen et al., 2000), as well as the first three question of the AUDIT (e.g. the AUDIT-C). I used a demographic survey to collect

relevant information. Additionally a subscale of the COVID-19 Phobia Scale (Arpaci et al., 2021) as incorporated to see the effects of the pandemic on these constructs.

Ethical Considerations

There were a number of ethical considerations for this proposed study. It was imperative to protect all participants from any harm while explaining fully any danger that this study might pose for them. For example, participants were recruited based on a marginalized identity, which could bring up psychological or emotional discomfort that they might not otherwise experience. In addition to an explanation of any risks involved, the participants were given informed consent as to the purpose of the study. The informed consent also explained that they were able to voluntarily terminate their involvement with the study at any time. During recruitment for participants, I followed appropriate protocol regarding language to use given the sensitive nature of participants revealing their identity as part of the screening process. Additionally, I provided the William & Mary's Educational Institutional Review Board (IRB) all information pertaining to recruitment, methodology, and rationale for the study, thus ensuring sound and ethical research practices before participation or survey-building begins. This process of IRB review increased the veracity of the study as well as other ethical values upheld during research, including justice considerations, fidelity of the measures used, and autonomy of the research participants to be able to choose whether they wanted to participate.

Summary

This chapter has provided an overview of the proposed study such as the main constructs to be explored, including alcohol use, social connectedness, and resilience among LGBTQ+ college students. I also provided a rationale for why the study warrants a quantitative exploration using the aforementioned constructs. Then, a review of definitions of the salient terms, and

identified ethical considerations was given. In the second chapter, I will give an extensive literature review of the constructs and further explanation of the rationale for the study should be conducted.

CHAPTER TWO- LITERATURE REVIEW

In this chapter, I will review literature that highlights stressors of college students, the impact of substance use among college students, and more specifically, substance use within the LGBTQ+ college student population. Then, I will introduce definitions of and concepts around social connectedness, detrimental vs. non-detrimental drinking behaviors, and reasons for substance use. Then, I will discuss the relevance of resilience as a factor for LGBTQ+ college students given the aforementioned constructs. Following, I will give an explanation on how the relationship between social connectedness and substance use is likely mediated by the concept of resilience within LGBTQ+ students. Finally, I will provide a sound rationale why these constructs are related before expounding upon a proposed methodology for conducting the study.

The Role of College as a Social Institution

The National Center for Educational Statistics (NCES, 2019) surveyed the most current population of college students. The survey found that in fall of 2017, there were 10.8 million college students enrolled in 4 year institutions, both public and private. At the same time, there were 5.9 million college students enrolled in 2 year education programs, such as community and junior colleges (NCES, 2019). By 2019, the number of total students completing studies at 4-year institutions had risen to 11.7 million full and part-time students in both private and public universities (NCES, 2019). Ford and Blumenstein (2013) found college student enrollment has dramatically increased in the past few decades. The authors argued that due to the role of higher education in career attainment and promotion, while considering the current state of the economy, a college degree has become almost a necessity for most young adults (Ford & Blumenstein, 2013).

In fact, Ford and Blumenstein (2013) found that among middle-aged adults, those who graduate from college earned, on average, \$1 million more by the age of 40 compared to adults that did not graduate from college. College graduates earned an average lifetime salary of around \$62,000 compared to non-college graduates, who earned approximately \$32,000. Thus, it is reasonable to argue for continued research among the college student population, given how many college graduates exist. Moreover, the aforementioned research foci can provide a rich, descriptive analysis of college student-concerns and behaviors that impact their health and well-being.

College Students and Mental Health Concerns

The National Survey of College Student Counseling Centers (NSCSCC; 2014) reported an overwhelming 94% of college student directors had reported an increase in prevalence and severity of mental health referrals on campus. These problems were predominantly symptomatology of clinical depression, anxiety, psychiatric medication compliance, and crisis situations such as suicidal ideation and sexual assault. According to the survey, 50% of students referred met the criteria for diagnoses with severe implications for their well-being and functioning, such as untreated major depression. This statistic of severe diagnoses increased by 8% in a one year span (NSCSCC, 2015). Within the students experience severe symptoms, 8% demonstrated such poor functioning and management that they were asked to leave campus or were only able to stay with significant psychiatric and psychological support. These statistics increased for schools with over 15,000 students (NSCSCC, 2015).

Lipson et al. (2017) noted that over a 10 year span from 2007 to 2017, rates of students who had received mental health treatment in the past year nearly doubled from 19% to 34%. More than 10% of students in the last reporting year sought out services for their mental health

needs. Moreover, within the 10 year duration, rates of mental health diagnoses increased by almost two thirds and over one third of all students reported a mental health condition in 2017 (Lipson et al., 2017). The authors assessed the strain that was being put on college counseling centers currently; their findings were very similar to those of NSCSCC (2015). College counseling centers were not only under resourced and understaffed, but many operated at full capacity, with waitlists in place for the majority of the academic year (Lipson et al., 2017).

Kessler et al. (2005) asserted that most life-long mental health diagnoses have begun onset by the age of 24. For example, bi-polar disorder, schizophrenia and debilitating presentations of depression and anxiety often plague young adults in college for the first time between the ages of 18-22. Most college students with such diagnoses have already begun displaying symptoms which could debilitate their functioning and impact their well-being (Kessler et al., 2005). Some research reviewed by Hunt and Eisenberg (2010) posited that help seeking-behaviors have increased among adults in the past generation; this is especially true for young adults, who are the typical age of students attending college. Thus, the increase in referrals with diagnoses might be indicative of changes in cultural ethos and value systems. However, Hunt and Eisenberg (2010) counter this argument by reasoning even if this were the case, the severity of disorders would not increase. Because the severity of disorders is increasing, there is a strong likelihood that college students are a vulnerable age group and have stressors that are particular to their current life-stage and identity as young, emerging adults. Mental health diagnoses are a significant predictor of substance use in college settings (Geisner et al., 2012; LaBriet et al., 2007)

Current Demographic Information and Implications

In one survey on demographics of current college students, the majority were White, female, and under 25 years old (NCES, 2019). Enrollment has decreased since 2010, with 5% fewer students enrolled now than a decade earlier. According to the United States Census, 52.9% of undergraduate college students identified as non-Hispanic/White, 20.9% as Hispanic, 15.1% as Black/African-American, and 7.6% identify as Asian (U.S. Census Bureau, 2018). According to NCES (2019), 62% of students who began school at a 4-year institution in Fall 2012 completed their degree at that same institution in 6 years. Females were more likely to complete graduation at the same institution within 6 years compared to males (65 vs. 59 percent). Even though there was a breakdown of race/ethnicity as well as gender, there is no currently method of formally tracking LGBTQ+ students.

Because there is no way of determining how many LGBTQ+ college students exist, it becomes difficult to identify unique needs of LGBTQ+ students. For example, Sue (2010) identifies that LGBTQ+ students routinely experience microaggressions, which impacts their academic functioning and sense of belonging on campuses. Currently, college campus structures do not systematically meet the needs of LGBTQ+ students, leading to poor retention rates and frequent dropping out (Sanlo, 2004; Sanlo & Espinoza, 2012). Moreover, 16 years after the recommendations of Sanlo (2004), there is still a lack of research pertaining to LGBTQ+ student retention, risk factors that impact retention, and resilience factors that let students academically and socially succeed.

Due to the specific needs of LGBTQ+ students in college settings due to various forms of discrimination (Hong et al., 2015), challenges to academic success (Woodford & Kulick, 2015), and feeling isolated from others (Evans et al., 2017), it is reasonable to question why data does

not exist pertaining to enrollment, retention, and graduation rates. Currently, there are over 100 campuses with a dedicated office or resource center for LGBTQ+ students with paid staff members (Windmeyer, 2017). Despite this, 104 campuses in 2016 applied for a federal exemption to openly discriminate against LGBTQ+ students on the basis of anti-LGTQ+ religious beliefs (Windmeyer, 2017). Additionally, 65.1% of transgender, queer, and gender non-conforming youth (TGQN) have reported being harassed at their current institution (Cantor et al., 2019). Given the literature presented, additional research is needed on the specific experiences of LGBTQ+ college students and how mental health professionals can better serve them within a empirically-supported, culturally-competent framework.

The Impact of Minority Status on Mental Health Outcomes

While it is evident that mental health in college students is a concern for college counseling centers (Hunt & Eisenberg, 2010), a number of studies have indicated differentiated mental health outcomes based on a student's identity as a minority. For example, Smith et al. (2014) studied the differences in mental health outcomes in both White students and those from minority backgrounds (i.e. Black and Latinx students) in both a majority-minority college (MMC) and a predominantly-White college (PWC). The authors conducted a linear and multivariate regression analysis and found that minority students reported poorer mental health outcomes compared to their White counterparts (Smith et al., 2014). Participants from a minority background on average reported higher levels of loneliness, depression, and past suicidality on average compared to White participants. Even students who represented the majority population at an MMC reported higher levels of depression and loneliness than white students at a PWC. These results were similar to Kearney et al.'s (2005) findings that among a large sample of White, Hispanic, Asian, and African American clients, Caucasian clients not only attended

therapy the most, but demonstrated less clinical distress on average than the other groups. Therefore, there appears to be a disparity in mental health outcomes for minority group members.

As intimated in Kearney et al.'s (2005) study, help-seeking behaviors were different for students from a racial/ethnic minority compared to White students (Miranda et al., 2015). Specifically, even when levels of depression, suicidality, and number of past attempts were equal among participants, racial/ethnic minorities were less likely to receive mental health treatment, or even follow-up from previous treatment. Miranda et al. (2015) found that the most common barriers to treatment included financial concerns, having enough time, feeling the need to solve problems on their own, and not knowing if the problem warranted treatment. Similar results were found for sexual-minority students seeking mental health services (Dunbar et al., 2017). However, sexual minority students, according to Dunbar et al. (2017) were more likely to want to treatment, seek services outside of campus, and actively endorse barriers preventing them from seeking treatment on campus. The reasons for not seeking treatment on campus centers included not feeling eligible for services and feeling embarrassed to receive treatment (i.e. stigma), which were almost identical to the barriers reported by minority students in Miranda et al.'s (2015) study.

The structural barriers that prevent mental health services from reaching LGBTQ+ students are worth further exploration. Moreover, while mental health appears to be an underlying factor influencing motives to drink, researchers offer a different interpretation of the relationship between these constructs for the LGBTQ+ community. In other words, the causes for drinking and other poor mental health outcomes are systemic in context. For example, Lee et al. (2016) studied the relationship between mental health, discrimination, and substance use disorders for

different gender expressions within the LGBTQ+ community. Higher levels of discrimination were found to significantly correlate to higher odds of having a diagnosable mental health or substance use disorder. Moreover, Lee et al. (2016) found that gender differences for coping emerged. Sexual minority women were more likely to have internalization (mental health) problems, while sexual minority men were more likely to have externalizing (substance use) problems. The authors concluded that minority stress theory underlies the relationship between discrimination and resulting substance use and mental health disorders.

McCabe et al. (2010) offered a similar interpretation to that of Lee et al.'s (2016) findings. The authors studied the effects of three types of discrimination (race-based, sexual-orientation-based, and gender-based) on the probability of having or developing SUDs for LGB adults in the United States. The researchers found that within their sample of 577 LGB adults, two-thirds experienced at least one of the types of discrimination in their lifetime. For those that experienced all three types of discrimination, odds of a past-year substance use were 4 times greater than those who did not report any discrimination (McCabe et al., 2010). The authors contend that health disparities are likely a result of discrimination (i.e. minority stress theory) that is prevalent within health care-models. This larger systemic problem correlated with inequities of mental and physical health outcomes for LGB adults who are afraid of stigmatization health care-providers. Nevertheless, the fact remains that LGB adults continue to experience this particular effect of minority stress at a greater rate on average, than their heterosexual counterparts (SAMSHA, 2020). Thus, the effects of poor mental health outcomes, such as substance use, are largely the result of feeling disconnected from others due to stigmatization. In the next section, I will cover how substance use negatively affects college students, and more specifically, LGBTQ+ students.

Substance-Use Among College Students

Because the period of time in young adults' lives is a time for experimentation that is largely unsupervised, (Arnette, 2000), substance use among college students, including drinking and related behaviors, is common and encouraged in these environments. Vander Ven (2011) conducted over 400 interviews of college students to find the social and psychological reasons behind drinking and how college settings influences these reasons. The author found that college students drink to cope with stressors, like those mentioned in Hurst et al.'s (2013) findings, for social solidarity and support, and for social rites of passage unique to the student experience, such as dealing with the aftermaths of a night of binge drinking (Vander Ven, 2011). Thus, there appears to be a social and inclusivity component to drinking that is regulated by specific behavioral and attitude norms particular to college campuses and settings of higher learning.

Johnston et al.. (2019) noted that within the past few years, with the increase in vaping and e-cigarettes, the use of nicotine and marijuana vaping had also significantly increased for college students. This is a contrary finding given the previous trend of smoking decreasing among American adults. Carter et al. (2010) noted that between college-students vs. non college-students of a similar age, rates of drinking were much higher, including the likelihood of demonstrating alcohol abuse and dependence. The author concluded that there was not enough evidence to determine whether this difference in drinking behavior was influenced by the institution of college campuses as a whole or whether particular constructs, such as social pressures, residence hall life, or Geek/fraternity life, were more specifically related to the detrimental drinking.

Negative consequences from alcohol consumption as found in Vander Ven's (2011) study is not the only indicator of substance abuse in college student populations. Toombs et al.

(2009) found that heavy, frequent drinking negatively impacted academic performance, particularly among first year college-students. Therefore, drinking might implicate academic functioning which could in-turn become an obstacle preventing successful graduation. Palmer et al. (2012) noted that in a survey given to college students regarding their substance use and negative impacts, around 69% of students reported having at least one negative consequence related to their substance use behavior. Of that portion of students, 63% reported having the negative consequence within a year of taking the survey, while 28% were generally concerned about their substance use. The most frequently used substance was marijuana (Palmer et al., 2012).

Ford and Blumenstein (2013) found a significant relationship between self-control/impulse control and the social environment around substance use and criminal behavior among college students. Specifically, low self-control compounded with the right environment (i.e. peer pressure, opportunity to engage) was predictive of higher engagement with criminal behavior and substance use (Ford and Blumenstein, 2013). Low religiosity, low academic performance, and high involvement with Greek life on campus was also associated with substance use (Ford & Blumenstein, 2013). Clearly, the authors showed that a link between certain group affiliations and drinking that warrants further exploration. Additionally, I will review literature that studies the psycho-social risk factors of drinking for college students.

Risk Factors for Substance Use in College Students

Caldeira et al. (2017) utilized structural equation models to test risk factors for both gambling and substance use for college students. Childhood conduct problems, higher levels of anxiety, mental health status, and drinking behaviors of parents all correlated with substance use (Caldeira et al., 2017). The authors found that involvement in Greek/fraternity life was also

associated with both gambling (i.e. high risk behavior) and higher levels of substance use than participants were who not affiliated with Greek life on campus. Furthermore, being a college athlete was found to both increase likelihood of drinking and developing an AUD. Additionally, sex and sensation seeking were indirectly related to substance use based on the structural equation model used by Caldeira and colleagues (2017).

These findings were like those of Ford and Blumenstein's (2013) study that demonstrated the correlation between lower levels of self-control and risk of problematic substance use, including binge-drinking, marijuana use, prescription drug use, and using other illicit substances. Additionally, Ford and Blumenstein (2013) discovered that peer deviance contributed significantly to the relationship between self-control and substance use in that hanging out with individuals who engaged in similar behaviors predicted higher levels of substance misuse. Thus, there appears to be a connection between connections with certain groups in both Caldeira's (2017) study and Ford and Blumenstein's (2013) analysis. In both studies, being affiliated with certain groups was a risk factor for engaging in high levels of substance use.

Students who identify as part of a minority group (e.g. Native Americans) are also at a higher risk for engaging in substance use, including detrimental drinking. Fish et al. (2017) noted that Native American students recruited from American college health databases were more likely to report higher levels of victimization and engage in heavier drinking behaviors than their non-minority counterparts. The authors posited that victimization as a result of racism led to feelings of alienation and isolation among the students. This isolation likely impacted their academic functioning, and increased the likelihood of engaging in poor college adjustment behaviors such as excessive substance use (Fish, 2017). Minority Stress Theory (Meyer, 2003) explains Fish's (2017) finding, and marginalized, historically-oppressed groups use substances to

cope with their feelings of not belonging to the campus culture at large. For example, Javier et al. (2013) used analyses of co-variance to determine differences in substance use and perceptions about substance use between White students and those who identified as a racial minority. The total population sampled was 900 students. Racial and ethnic minority students were more likely to have a greater discrepancy with their perceptions vs. behaviors, implying that due to misperceived social norms they are at a higher risk of engaging in substance use (Javier et al., 2013). Thus, drinking risk factors do not appear to be uniform for college students; moreover, a number of risk factors, identities, and personality traits impact students' drinking behaviors.

The Impact of Drinking

College is a time for experimentation, including meeting new people, having first-time experiences, and trying substances (Arnette, 2000). According to a survey reported by the National Institute of Alcohol and Alcohol Abuse (NIAA), over 50% of college students used alcohol within the past month. Additionally, one out of three students engaged in binge drinking during that same time-period (SAMSHA, 2019). The NIAA reports that many problems related to alcohol surround binge drinking. Binge drinking is defined as a pattern of drinking that brings blood alcohol concentration (BAC) level to 0.08 g/dL. For the average size man, this occurs when he consumes 5 drinks in 2 hours. For the average size woman, that occurs when he consumes 5 drinks in 2 hours (NIAA, 2020).

Jones et al. (2001) noted that there is a significant relationship between students who engage in binge drinking and using other illicit substances. In fact, students who engaged in binge drinking were more likely to have used cigarettes, marijuana, cocaine, and other illegal drugs. Additionally, students who binge drank more had a higher likelihood of having used these other substances (Jones et al., 2001). The authors surmised that binge drinking was at the root of

most detrimental polysubstance use among students and that prevention programs could reduce student alcohol use by directly addressing binge drinking.

Binge drinking results from various psychological phenomena within college student populations. For example, Chen and Feeley (2014) found that college students were more likely to engage in binge drinking when friends had positive attitudes towards drinking and when drinking was associated with positive affect expectancies (i.e. pleasant feelings). In this study, the authors did not find that drinking in this particular participant group was related to loneliness. Researchers also found that the only protective factor against binge drinking for their study was participants' perceived control of drinking (Chen & Feeley, 2014). The authors found that while loneliness was not significantly related to drinking, stress was a predictor of increased alcohol-use. These results were similar to relationships between drinking and stress in Dawson et al.'s (2005) study. Chen and Feeley (2014) posited that students who report feeling lonelier are likely to be in less social settings where alcohol is used as a social lubricant. However, a significant limitation included a small time frame (i.e. 2 weeks) between when predictor variables were measured and drinking behaviors were measured. Additionally, other studies, including Yawger (2018) and Paswan et al. (2015), indicated that social isolation was a predictor of higher levels of drinking in college-aged adults.

Risk Factors for Binge Drinking

There are a number of risk factors that have been associated with higher levels of binge-drinking, commonly referred to as high intensity drinking (Patrick & Azar, 2018). For example, Fenzel (2005) noted that marijuana and tobacco use significantly accounted for binge drinking among college students in their study. Additionally, a small friend network group was associated with heavier drinking, given that drinking behaviors in college are highly influenced by social

norms (Frenzel, 2005). Moreover, those who were heavier drinkers were more likely to be polysubstance users, and therefore, less likely to healthily cope with stressors. These findings were congruent with Jones et al.'s (2001) discovery that binge drinking was the main cause of polysubstance use within college students. Similar to the mitigating effects of connection found in Yawger's (2018 study), Frenzel (2005) found that community participation on college campuses was related to reduction in drinking rates, although case and effect were not able to be determined.

McCabe et al. (2019) evaluated the normative beliefs around drinking behaviors across college students from different ethnicities. The authors found that Hispanic/Latino and Black/African American ethnicity moderated the relationship between perceived typical drinking norms and the participant's own drinking. Thus, there appears to be a protective factor that ethnicity or race provides based on the results of this study (McCabe et al., 2019). However, because data was collected and analyzed via a singular cross-sectional assessment, causality is not able to be determined. Additionally, data analysis showed that other ethnicity groups did not report their ethnicity/race acting as a buffer against the connection between drinking norms and behaviors. The study indicated that there are more nuanced drinking norms and behaviors across minority college students, which warranted further explanation about causes of these norms, including cultural factors.

Additionally, Gruzca et al. (2009) used time-trend analyses and statistical regression to assess the risk factors and general trends of binge drinking over a period of three decades for data from 500,000 participants. The results indicated that college students have not followed the general trends of reduction in risk drinking that adolescents have experienced. Additionally, for both females, and racial and ethnic minority females, risks of binge drinking increased over time

(Gruzca et al., 2009). Similar to the findings in McCabe et al. (2019), drinking behaviors were different among certain minority groups; however, thus far, literature has not investigated thoroughly why that is the case. Additionally, the authors recommend that additional research be completed regarding the impact of campus-culture on drinking behaviors, noting that interventions for drinking should focus on campus-specific attitudes. One of the impacts of drinking is detrimental mental health outcomes among college students (Geisner et al., 2012; Miller et al., 2017) however, this relationship is particularly salient for LGBTQ+ students (Woodford et al., 2012). Drinking has also been associated with poor mental health outcomes; thus, further research should be conducted on constructs related to drinking, particularly in light of the current mental health crisis on college campuses.

Connection Between Mental Health and Drinking

As noted earlier, heavy drinking, including binge drinking, significantly impacts the well-being of college students. Beck et al. (2008) highlighted that college students are facing an overwhelming amount of changes as they transition from home-life to campus. For example, not only are students away from parental supervision and have more autonomy in their schedule, but they are tasked with navigating new social environments (Beck et al., 2008). Thus, it is logical to assume that drinking behaviors, which sometimes started in high school, are often consolidated or escalated due to the psychological and social stressors that students experience (Beck et al., 2008).

For example, Geisner et al. (2012) conducted a study that included over 700 college students who completed an inventory on drinking behaviors and the Beck Depression Inventory (BDI; Geisner et al., 2012). There was a significant, positive correlation between high scores of problematic drinking and high scores on the BDI, which indicated higher likelihood of

depression (Geisner et al., 2012). Drinking and depression appear to be related, although the authors were not able to determine a causal relationship between the two constructs. Similarly, Dawson et al. (2005) noted that whether or not college students were depressed, drinking engagement and frequency was higher when students believed they could use drinking to cope with stress and deal with the pressures of their environment. Indeed, the authors found that among students who used drinking as a maladaptive coping strategy, feelings of depression emerged more frequently (Dawson et al., 2005).

LaBrie et al. (2007) identified that students who viewed drinking as a social ritual were more likely to experience negative impact their moods from their drinking. Thus, there appears to be a self-medicating function to alcohol that is empirically-supported by this study. Additionally, alcohol use, even without an initial alcohol use disorder, appears to relate to mood problems and an increase in symptoms of depression (Dawson et al., 2005; Geisner et al, 2012; LaBrie et al., 2007). It is also fair to postulate that college students do not get many positive outcomes regarding mental well-being and level of functioning when engaging in heavy drinking to cope with negative emotions.

Miller et al. (2017) identified the behaviors of students who engage in heavy drinking during their college years. A significant portion of heavy drinkers sampled demonstrated increased symptoms of anxiety, depression, or another mental health illness. Despite the fact that the sample prevalence of psychiatric disorder was lower than other studies, the presence of psychiatric symptoms was still greater than the average adult population (Miller et al., 2017). These findings were similar to those of Kenney et al.'s (2013) study exploring the relationship between mental health symptoms, sleeping, alcohol expectancies, and consequences related to drinking. The authors discovered that mental health symptoms were not directly predictive of

alcohol use; however, it was indirectly related by effecting both drinking and expectancies around drinking (Kenney et al., 2013). Interestingly, all of the aforementioned studies indicate that while mental health and substance use, particularly drinking, are related, there appears to be other constructs that explain the phenomenon (Dawson et al., 2005; Geisner et al., 2012; LaBrie et al., 2007). In the case of Kenney et al. (2013), participants with poor mental health symptoms, had negatively affected sleep quality, which led to higher levels of drinking.

Kenney et al. (2018) also noted that perceptions of drinking behaviors of peers interacted with mental health and affected drinking behaviors of college students. Specifically, while poor mental health, both anxiety and depression, were related to higher drinking for participants overall, participants with average lower mood scores (i.e. more depressed) were more likely to think their peers drink heavily, and as a result, increase their own alcohol consumption. The most surprising result of this study was that participants with strong mental health were less likely to succumb to misperceptions about their peers drinking behaviors (Kenney et al., 2018). The authors purported that one explanation for this finding is that students with lower levels of social anxiety and symptoms of depression are less susceptible to riskier social behaviors and situations.

The Influence of Connection to Others

Both Kenney et al. (2013) and Kenney et al. (2018) intimate that both drinking and mental health were related; however, a third construct- sleep, and socially-based stressors, influenced drinking behaviors and using drinking to cope. While poor mental health may initially appear to be the underlying cause for drinking behaviors, studies have shown contrary findings that infer drinking and mental health may be more related to the context of isolation and interpersonal well-being (Gonzalez, 2012; Keough et al., 2014). Specifically, Gonzalez (2012)

found that solitary drinking was more associated with riskier drinking, inferring that those who might be socially connected to others drink more moderately, in comparison. Additionally, Keough et al. (2014) tested the mediating variables in different contexts that contribute to the relationship between drinking and depression. The authors found that elevated drinking symptoms was predictive of higher levels of solitary drinking behavior. More frequent solitary drinking, in turn, was associated with a higher number of drinking problems (Keough et al., 2014). However, the authors noted that drinking for participants who reported higher levels of depression drank less at parties, and thus, were less susceptible to heavy alcohol use and related consequence (Keough et al., 2014). Thus, the link between mental health and drinking was heavily influenced by the context of drinking, such as whether or not the drinking occurred in isolation or while socializing with others.

Based on the aforementioned literature, it is logical to hypothesize that there are other, more nuanced constructs within the relationship between poor mental health and problematic drinking, such as the desire to connect with others. For example, Abbey et al. (1993) found that coping motives significantly influenced drinking behaviors for their adult participants, namely, drinking to deal with stress and drinking to socialize with friends. For example, college students who reported strong levels of social health (i.e. higher levels of connectedness and happiness with relationships) were more likely to drink than students with poor levels of social health, according to LaBrie et al. (2010). Similarly, Hunt and Burns (2017) found that among young university students, higher levels of social connectedness predicted more hazardous drinking. The authors reported that those associated with particular groups within the college community, including athletic teams, were more likely to engage in hazardous drinking. Social identity, which was operationally defined as to what level did participants feel they belonged to a certain

group and what value they placed on that group, influenced drinking behaviors more significantly than connectedness (Hunt & Burns, 2017). Additionally, Chen and Feeley (2016) found that loneliness was not a significant predictor of binge drinking among a representative sample of U.S. undergraduates. The authors explained that having fewer social connections decreases the likelihood of drinking while socializing, and thus, cutting students off from opportunities to use alcohol. Overall, the literature for heterosexual college students intimates that higher levels of connectedness to others is generally associated with higher levels of drinking.

The Relationship Between Drinking and Resilience

Resilience has been defined as the ability to cope with or adapt to stressful events (Williams et al. 2010). The ability to bounce back from stressful events might serve as a protective factor for individuals who are experiencing the psychosocial stressors of college. Lyvers et al. (2020) found that among a survey of female, Australian undergraduates, higher levels of resilience was related to less problematic drinking compared to those who had lower levels of resilience. Johnson et al. (2011) noted that trait resilience was negatively and significantly correlated with alcohol consumption among college students in their study. The authors further noted that resilience factors were overall lower for female-identifying participants compared to their male-counterparts. Therefore, there might be differences among trait-resilience among different genders.

Social support was not found to be significantly related to resilience among a sample of college students outside of the United States (Paul et al., 2015). However, Ergün-Başak and Can (2018) found that social connectedness did increase a sense of optimism, and indirectly, psychological resilience for a group of lower-income college students. Additionally, Leary and

DeRosier (2012) found that social connectedness was a significant predictor of lowered perceived stress for first-year students acclimating to college; however, social connectedness was a factor within the resilience measurement used and thus, the correlation between the two constructs was not established.

While college students are more likely to drink than their non-college attending counterparts, there is differentiation in drinking behaviors for marginalized populations, such as LGBTQ+ students. According to SAMSHA (2019), LGBTQ+ teens are significantly more likely to drink at dangerous levels during their teen years, prior to entering higher education. Moreover, the survey cites research by Voas and Fell (2012), who found that among the SAMSHA-supported Suicide Prevention Resource Center (SPRC), young gay and bisexual males are 14 times more likely to commit suicide compared to heterosexual men in their age bracket. LGBTQ+ students are often at a higher risk of victimization, being threatened, and engaging in harmful substance use to cope with these experiences (Voas & Fell, 2012). The authors contend that LGBTQ+ students bring these psychological experiences and coping mechanisms into the campus environment, where further experiences of victimization compound their stressors and turning to unhealthy coping mechanisms.

Sexual Minority Students and College Student Development

When researchers address the psycho-social needs of college students, many incorporate a college student development theoretical framework. For example, Mancini (2012) discussed the importance of Chickering and Reisser's (1993) last two vectors of student development-identity formation and the establishment of healthy interpersonal relationships for sexual minority students. Chickering and Reisser (1993) claim that a student's understanding of who they are and which groups they identify with is a hallmark of appropriate development for many

college students. The formation of identity often occurs with identifying and cultivating personal relationships with others that are reciprocal, authentic, and meaningful (Chickering & Reisser, 1993). Mancini (2012) argued that due to oppressive contexts, LGBTQ+ students are often resigned to focus on development within these two areas exclusively. Thus, less attention is given to Chickering and Reisser's (1993) other vectors of psycho-social development- developing competence, managing emotions, moving toward independence, developing purpose, and cultivating a sense of integrity.

Given the developmental needs of all college students, it is worth considering how Chickering and Reisser's (1993) two vectors of growth apply to the LGBTQ+ student experience. I argue that due to the rampant victimization of sexual minority students on campus (Woodford et al., 2014), these two aspects of development are implicated, if not disrupted entirely. As previous researchers noted, welcoming campus climates, feelings of belonging, and academic and social engagement are lacking in LGBTQ+ college students (Morris & Trent, 2019; Woodford & Kulick, 2015). Continued research should be conducted to evaluate the relationships between constructs such as connectedness with others, LGBTQ+ identity and other facets of college-student life, such as behaviors around drinking that affect them at disproportionate rates (SAMSHA, 2019).

Experiences of LGBTQ+ College Students

Sexual minority students are a particularly vulnerable population in many ways. According to a campus-climate survey by Association for American Universities (AAU) in 2015, 75% of LGBTQ+ college students reported having experienced sexual harassment on at least one occasion during the college experience. Around, 20% of sexual minority students feared for their physical safety based on their perceived sexual orientation or gender identity. LGBTQ+ students

of color were not immune to this treatment either; their racial or ethnic identity exacerbated maltreatment and harassment. Around 21% of LGBTQ+ students of color reported conduct that was hostile, offensive, intimidating or left them feeling excluded due to their racial identity (AAU, 2015). Below, I will introduce the impact of campus cultures and why certain stressors faced more frequently by minority students.

The Impact of Campus Culture

Woodford and Kulick (2015) sought to understand the effects heterosexism has on minority students. Heterosexism can best be defined as a term analogous to sexism and racism, and describes ‘an ideological system that denies, denigrates, and stigmatizes any non-heterosexual form of behavior, identity, relationship, or community’ (Herek, 1990, p. 316). The authors investigated the relationship between dimensions of campus climate for sexual minority students and academic engagement (i.e. academic engagement and GPA) as well as social integration (i.e. institutional satisfaction and identity- acceptance on campus). Two particular constructs of campus climate were assessed- psychological campus climate, and experiential campus climate. Psychological campus climate refers to standards, beliefs, and practices related to the inclusion of and wellness-promotion of the LGBTQ+ student population. Experiential campus climate consists of instances of heterosexism and discrimination that are more blatant towards LGBTQ+ students (Woodford & Kulick, 2015). Overall, the authors found that heterosexism on college campuses is associated with decreased social and academic engagement for sexual minority students. Psychological campus climate significantly impacts social engagement, while experiential campus climate influences academic engagement. In support of one of their hypotheses, the researchers also noted that increased student engagement with

informal academic and social support systems increases both academic and social integration for sexual minority students (Woodford & Kulick, 2015).

Coulter and Rankin (2020) highlighted the increased likelihood that sexual and gender minorities were more likely to experience sexual assault compared to their heterosexual counterparts. The authors utilized multivariate logistic regression to find protective factors that lower rates of sexual assault for these students (Coulter and Rankin, 2020). The researchers found that higher levels of inclusion on campus for gender and sexual minorities was associated with significantly reducing the amount of times LGBTQ+ students were assaulted by perpetrators. Recommendations for prevention and intervention included cultivating a more tolerant, accepting, and inclusive campus culture. Recommendations included student-centered groups/centers, rigorous diversity training for faculty and staff, and strict enforcement of anti-discrimination laws (Coulter & Rankin, 2020). The power of social connection and inclusion as a protective factor for violence perpetrated against LGBTQ+ students is bolstered by the study's large and geographically-diverse sample size. However, similar to other studies, the cross-sectional design did not allow researchers to explore causation. Additionally, the study did not include assessing for alcohol use, which is a large compounding factor with many sexual assaults. Nevertheless, the study provided a generalizable, quantitative analysis that confirmed the presence of systemic oppression affecting sexual minority students. The hypothesis that connection to others is a protective factor for sexual minority students is discussed in other studies as well (Mason et al., 2014a; Paswan et al., 2015).

Ylloja et al. (2016) identified the relationship between previous-year microaggression frequency and levels of smoking among sexual minority college students. Almost 1,000 students were recruited for this study from LGBTQ+ conferences, online-platforms, and listservs. The

authors showed that there was a statistically significant relationship between the students who experienced more frequent microaggressions and higher levels of smoking (Ylloja et al., 2016). Even when controlling for other variables, such as demographics, physical violence, alcohol use, academic stress, and engagement indicators, bivariate and multivariable results indicated that microaggressions were dealt with by negative coping mechanisms, such as smoking. Ylloja et al. (2016) contend that even more subtle forms of discrimination have larger consequences on the physical and mental health outcomes of sexual minority students than some previously believed. Similar to Coulter and Rankin (2020), the researchers recommended that college campuses should have LGBTQ+ specific-centers for social engagement and support. They also recommended that campus cultures should commit to training on microaggressions, having ‘teachable moments’ in the classroom for real-time corrections, and instructing bystanders on how to intervene when they notice microaggression toward LGBTQ+ students.

Overall, campus culture is a significant source of stress for minority students, given that both obvious (e.g. sexual assault) and less conspicuous (e.g. microaggressions) stressors are detrimental for sexual minority students and contribute to unhealthy coping mechanisms (Coulter & Rankin, 2020; Ylloja et al., 2016). Currently, minority stress theory comprises the framework that most researchers incorporate when exploring constructs related to LGBTQ+ college students. However, there are a number of minority stressors that currently exist, given the variety of new college experiences and the unique psychosocial influences within campus culture. These stressors cause poor mental and physical health outcomes for sexual minority students and are often caused by systemic factors that supersede isolated discriminatory events.

The Role of Minority Stress

The concept of minority stress has been frequently researched and expounded upon since Meyer's (2003) study. Minority stress is defined as the 'relationship between minority and dominant values and resultant conflict with the social environment experienced by minority group members' (Meyer, 1995, p. 39). The effects of stressors include both proximal (e.g. internalization of discrimination via rumination and poor self-worth) and distal stressors (e.g. experiencing discrimination from others) (Meyer, 2003). Minority stressors can effect many areas of LGBTQ+ adults' lives. For example, the LGBTQ population engages in higher average-rates of substance use on average than their heterosexual counterparts (Lachowsky et al., 2017). Higher levels of substance use due to minority stressors use requires unique clinical attention from therapists when LGBTQ individuals seek mental health services (Lachowsky et al., 2017; Schuler, Rice, Evans-Polce, & Collins, 2018). Given the frequency of substance-use on college settings and instances of heterosexism that exist among sexual minority students, researchers have found sexual minority students engage in higher rates of substance-use on average due to their marginalized status (Dworkin et al., 2018; Woodford et al., 2012, Hatzenbuehler et al., 2011). Substance use in the LGBTQ+ student population, particularly drinking, will be covered in depth in a later section of the paper.

Higher frequencies of substance-use disorders in the LGBTQ+ community are not the only detrimental effect of discrimination and resulting stress in sexual minorities. Meyer's (2003) seminal study conceptualized and explained a proposed model that described an array of detrimental effects LGBTQ individuals experience as a result of discrimination and feelings of not-belonging. This model is the mechanism by which LGBTQ+ individuals experience and internalize stresses related to discrimination within their social environments (Meyer, 2003).

According to Meyer (2003), sexual minority individuals experience a variety of stressors due to their marginalized status, which include acts of heterosexism through prejudicial events as well as anxieties of feeling rejected by others around them.

Mental Health Outcomes

These minority stressors, which result from social experiences over time, lead to poor mental health outcomes (Meyer, 2003). Such poor mental health outcomes include a higher likelihood of suicidal ideations and a higher prevalence of depression, anxiety, and other related diagnoses. Given the prevalence of these minority stressors in LGBTQ+ individuals' social circles (Meyer, 2003; Meyer, 2005), the literature substantiates the need for researchers to explore the social sphere of sexual minority populations in their university settings. Other literature has supported that stressful events, instances of discrimination, and feelings of rejection have led to poor mental health outcomes among sexual minority students, including higher risks of suicide and depression (Woodford et al., 2014).

Minority stress theory is a popular, empirically-supported theory that explains disparities in health outcomes for sexual minority students (Goldbach et al., 2014). However, there are nuances within this theory that were explored when utilizing this framework for the current study. Goldbach et al. (2014) conducted a meta-analysis demonstrating that the relationship between minority stressors and substance use was strengthened by higher levels of internalized homophobia as well as taking longer to come out. Moreover, experiences of threats, victimization, and violence were highly correlated ($r = .60$) with substance use for LGB adolescents. The definition of adolescence included individuals from age 13 to 25, which overlaps with the average age group of participants recruited for this study. The results from 12 of the identified studies included in the meta-analysis indicated that the strongest risk factors for

substance use were not only victimization, but also a lack of supportive environments, the presence of psychological stress, the degree of internalizing or externalizing problem behavior, and negative reactions to sexual identity disclosure (Goldbach et al., 2014).

Mereish et al. (2017) explored other factors that contribute to disparities in substance use among sexual minority adolescents (SMA; Mereish et al., 2017). The authors found homophobic bullying was not a significant predictor of higher levels of substance use for SMAs. In fact, social norms were significantly related to disparities in substance use for a variety of substances in SMAs. These social norms included others' perceptions of participants behavior and whether or not the behavior was approved (Mereish et al., 2017). The authors recommended that additional research should focus on the particular dynamics between social norms, peer and family support, and the relationship with substance use to discover what relationship exists among these constructs. This study was also heavily comprised of ethnic and racial minorities among the participant sample; thus, the results were more generalizable to the target population of SMAs within the United States.

The Impact of Social Environment on Mental Health Outcomes

Concerns about physical and mental health are growing regarding the frequency and severity of cases in college campuses broadly (Hunt & Eisenberg, 2010; NSCSCC, 2014), and LGBTQ+ college- students are a particularly vulnerable population regarding susceptibility to poor mental health outcomes, including substance use (Peter & Taylor, 2014; Woodford et al., 2014). Sexual minority students are more likely to experience higher rates of discrimination (Woodford & Kulick, 2015), anxiety, depression, suicidal ideation, and feelings of being a burden than their heterosexual counterparts (Silva et al., 2015). Heterosexist harassment and being discriminated against were also significant predictors of lower satisfaction with academics

and a reduced desire to remain enrolled at the student's current institution (Morris & Trent, 2019). Therefore, among that sample, sexual minority students were significantly more likely to drop out or transfer schools (Morris & Trent, 2019).

Among cis-gender LGBTQ+ participants, both blatant and subtle heterosexism were associated with an increased risk of suicide and depression (Woodford et al., 2014). The relationship was particularly salient for blatant victimization, which includes outward displays of physical violence or threats. Subtle discrimination included heterosexist and derogatory language, such as hearing 'That's so gay' in a pejorative manner (Woodford et al., 2014). It is interesting to note that both overt and covert displays of heterosexism were associated with increased risk of suicide and depression. This substantiates previous literature where authors argued that subtle and overlooked behaviors can be just as detrimental in their effects on minority students as more outwards displays of aggression and discrimination (Meyer, 2003; Meyer, 2015).

Socially-based stressors (i.e. minority stressors unique to sexual minorities) were also found to contribute to non-injurious self-harming among sexual-minority college students. Similar to previous findings, these socially-based stressors included victimization as well as discriminatory acts and comments. (Blosnich & Bossarte, 2012). Busby et al. (2020) noted that victimization and harassment was also related to both the presence and severity of depression and suicidal ideation in sexual minority students. Kulick et al. (2017) identified the protective factors inherent in community engagement for both White and persons of color (POC) LGBTQ+ students. Linear regression models were conducted to identify the effects of interpersonal heterosexism and engagement with campus organizations on levels of depression. They also tested for racial differences between these relationships (Kulick et al., 2017). Discriminatory

experiences were found to correlate with depression in a significant, positive relationship for both White and POC LGBTQ+ participants.

For POC individuals, only blatant heterosexist acts of violence were associated with higher levels of depression, and for White individuals, only interpersonal microaggressions were positively correlated with depression (Kulick et al., 2017). These findings were replicated in earlier studies as well. POC sexual minorities on average experience blatant, overt racial discrimination that conceals discrimination against sexual and gender identity (Balsam et al., 2011). On the other hand, White sexual minorities are likely to succumb to the negative effects of microaggressions (Woodford et al., 2013). It is important to note that the authors noted the negative effects of both blatant and less obvious forms of discrimination and heterosexism. Moreover, racial and ethnic group appears to act as an intersecting identity; thus, sexual minority POC experience different and often compounded, forms of discrimination.

Overall, based on the presented literature, there is substantial evidence that sexual minority college students are at a higher risk than their heterosexual counterparts in experiencing painful and systematic minority stressors which impact their mental well-being and ability to thrive. There appears to be evidence that certain protective factors can alleviate the impacts of discrimination, including negative mental and physical health outcomes for sexual minorities. For example, Kulick et al. (2017) identified that different types of campus engagement may act as either a moderator or exacerbator of the relationship between discrimination and depression. The rationale for this study involves aspects of campus engagement including social connectedness with others. In the next section, I will discuss how poor mental health outcomes within sexual minority college students is often associated with drinking, although there is not a traditional causal relationship between the two phenomena.

Drinking and Mental Health in the LGBTQ+ Community

The presence of disparities in mental health outcomes the LGBTQ+ community vs. the majority population have long been established (Silva et al., 2015; Woodford et al., 2014).

However, the causes of outward symptoms of poor mental health or coping strategies, such as heavy drinking, have not been heavily researched within the LGBTQ+ community.

The relationship may not be as simple as poor mental health predicts drinking for sexual minorities. For example, Newcomb et al. (2012) examined risk and protective factors for alcohol use among LBTQ youth between the ages of 16-20. The positive, significant relationship between lifetime psychological distress, sexual-based victim discrimination, and alcohol use was only seen for females. Nevertheless, family support was a protective factor against drinking for these participants (Newcome et al., 2012). The authors recommended that continued research should be done investigating the role of other socially-based support in lieu of unsupportive family support systems. The hypothesis that drinking behavior is more related to socially-based stressors than mental health status is supported by other literature as well, both for heterosexual (Sherry et al., 2012) and LGTQ+ (Dermody et al., 2014) populations.

Hatzenbuehler (2009) offered a similar interpretation of the relationship between the constructs of minority stressors, social/interpersonal forms of support, and related psychopathology. Synthesizing a plethora of detailed literature with unique perspectives, the author purported that the simple relationship between stressors and negative mental health outcomes is mediated by other pertinent psycho-social factors for LGBTQ+ individuals (Hatzenbuehler, 2009). These factors include social and interpersonal problems, emotional dysregulation, and cognitive processes that lead to poor mental health functioning. When these processes are not there, such as social support, poor psychopathology and the negative effects of

discrimination and victimization increase. This includes using poor coping mechanisms such as substance use (Hatzenbuehler, 2009). Johnson et al. (2013) found that among SMW, socially-based stressors, including expectations of rejection or being forced into heterosexual relationships were found to be a predictor of both increased anxiety (i.e. mental health symptom) and riskier alcohol use. Therefore, mental health symptomology and substance are likely symptoms of an underlying socially-based concern that results from increased discrimination and systemic-policies within a heterosexist culture (Hatzenbuehler et al., 2008; Hatzenbuehler, 2009; Johnson et al., 2013).

Drinking in the LGBTQ+ Population

As mentioned earlier, researchers have found that the LGBTQ+ population, on average, engages in higher rates of substance use than heterosexual individuals. (Lachowsky et al., 2017; Schuler et al., 2018). Given the higher likelihood of problematic substance-use with this marginalized population, the higher engagement with substance use requires specific clinical attention when working with LGBTQ+ individuals in mental health settings (Lachowsky et al., 2017; Schuler et al., 2018). There are a few general trends found among LGBTQ+ individuals who use alcohol and other substances. For example, Flentje et al. (2015) noted that among gay men, there was a higher likelihood of using methamphetamines and alcohol compared to heterosexual men.

Lea et al. (2013) corroborated these findings pertaining to substance use within sexual minority populations. The authors analyzed the differences among scores on the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C; Lea et al., 2013) for LGBTQ+ participants who attended primarily gay/lesbian-oriented bars and venues vs. LGBTQ+ individuals who socialized at primarily 'straight' or mixed venues. The authors found a

significant higher rate of hazardous alcohol use among participants who frequented more gay-oriented venues. One finding in this study was the tendency for gay men within the sample to abuse club drugs at a higher rate than alcohol while sexual-minority women were at a greater risk for problematic drinking (Lea et al., 2013).

Hagger-Johnson et al. (2013) drew data from a larger-scale initiative to study the behaviors of young adults in England in order to study the relationship between sexual orientation and drinking behaviors. The authors used chi-squared analyses to test for significant differences for gay/bisexual males versus heterosexual participants for each variable. Gay and lesbian-identified participants were more than twice as likely to drink alcohol twice or more per week compared to their heterosexual counterparts, including after adjustment for any covariates (Hagger-Johnson et al., 2013). Additionally, both lesbian and gay participants were 1.8 times more likely to engage in risky-single occasion drinking (RSOD; Hagger-Johnson et al., 2013). Bisexual individuals did not demonstrate drinking behaviors that were statistically significantly different than heterosexual participants.

The stratification of drinking behaviors between different genders in the LGBTQ+ community varies. Negative consequences from drinking appears to be more likely among females in the LGBTQ+ community. Hughes et al. (2016) reviewed literature pertaining the use of alcohol among sexual-minority men (SMM; Hughes et al., 2016) and sexual-minority women (SMW; Hughes et al., 2016). One study indicated that the risk of alcohol or drug dependence was 50% among SMM compared to heterosexual men and women. The authors noted that SMW were actually at a higher risk than SMM of binge drinking and developing an Alcohol-Use Disorder. The authors summarized that gay men are not as likely to drink as heavily as their heterosexual counterparts, and often drink at the same levels of heterosexual women. Therefore,

SMM are less likely to have a dependence on alcohol. SMM may be more likely to abstain from drinking due to concerns about caloric intake and body image (Hughes et al., 2016).

Additionally, Hatzenbuehler et al. (2008) noted that for SMW, the quality of peer support mediated the relationship between sexual orientation stressors and higher levels of drinking. Additionally, social norms was a mediator of the relationship between consumption of alcohol and sexual minority status Both Hughes et al. (2016) and Hatzenbuehler et al. (2008) indicated that future research should be done about the mediating roles of social-stressors on LGBTQ+ health disparities, including substance use. Additionally, further research is warranted to confirm the presence of higher drinking within the LGBTQ+ population as a whole. Based on the literature, it is apparent that at on average, a significant portion of the LGBTQ+ community is at risk for problematic substance use, particularly alcohol consumption. Below, I will further specify the trends of alcohol use among LGBTQ+ college students. I will present an argument that this population is susceptible to drinking as a means of dealing with hostility and discrimination on campus cultures, which ultimately relates to social connectedness.

Drinking Among LGBTQ+ College Students

Woodford et al. (2012) conducted a study describing the drinking behaviors of sexual minority students who experienced more frequent acts of incivility and witnessed more hostility compared to students that experienced less hostility and incivility. Incivility included subtle behaviors related to being treated poorly, rudely, or with disrespect. The researchers found that sexual minority students who were privy to hostile environments and incivility based on their identity were more significantly more likely to drink at higher levels than the students that experienced less antagonism (Woodford et al., 2012). Perhaps more interesting in the study was the researchers findings that irrespective of experiencing hostility or witnessing uncivil acts,

sexual minority students were more likely to report any instance of alcohol use, as well as more likely to report problematic drinking compared to heterosexual students (Woodford et al., 2012). These findings are congruent with the previously-mentioned studies where researchers found that the broader LGBTQ+ community drank at higher than average levels compared to the general population and heterosexual individuals, specifically (Lea et al., 2013; Lachowsky et al., 2017; Schuler et al., 2018).

Dworkin et al. (2018) found that SMW were more likely to drink to increase their positive affect, cope with negative affect and to increase social rewards such as fitting in with others on campus. These findings were similar to Hughes et al.'s (2016) research; however, Dworkin et al. (2018) sought out to study motivations for why SMW drink at detrimental rates. Drinking was more likely to be motivated by wishing to modulate emotions when drinking with heterosexual students, while drinking with sexual minorities was more linked to gaining social rewards (Dworkin et al., 2018). Therefore, there were different motivations to drink for SMW students in this study, depending on their drinking companions. It is likely minority stress theory explained the moderating effect of being around sexual-majority students. Social learning theory, which includes emulating others in a shared-identity group in order to fit in, likely explained drinking motivations when participants were around other SMW students (Dworkin et al., 2018). However, within the study, the authors only tested for perceptions of fitting in and gaining social rewards and those who had higher negative affect were more likely to drink. While there is a relationship between mental health and positive health outcomes, such as less substance use, there appears to be a more substantial reason for why this predisposition to negative affect exists for sexual minorities. For example, feeling hostility and less connected to others likely contributes to using drinking as a coping mechanism.

The negative effects of subtler forms of aggression experienced by sexual minority students was also supported by the literature. Microaggressions, for example, are defined as “the everyday verbal, nonverbal, and environmental slights, snubs, or insults, whether intentional or unintentional, which communicate hostile, derogatory, or negative messages to target persons based solely upon their marginalized group membership” (Sue, 2010, p.3). In line with minority stress theory (Meyer, 2003), microaggressions create a heterosexist environment that casts non-heterosexual identities and behaviors in a negative light (Winberg et al., 2019). The authors explored the relationship between hearing microaggressions, such as ‘that’s so gay’ or ‘no homo’ and substance use for sexual minority college students. Using multivariate regression analyses, the researchers found that hearing phrases such as ‘that’s so gay’ to pejoratively describe something as negative, stupid or uncool, and hearing ‘no homo’ were significantly correlated with greater likelihood of hazardous alcohol consumption and illegal drug use (Winberg et al., 2019). While the results of this study are similar to the findings of Woodford et al. (2012), the authors show the detrimental impact that seemingly ‘harmless’ language has on a marginalized group (Winberg et al., 2019) .

To understand more about minority stressors and the rationale for why marginalized populations, including sexual minorities, are susceptible to alcohol abuse, Hatzenbuehler et al. (2011) tested a model describing the relationships between problematic drinking, discrimination, cognitive (positive alcohol expectancies), and affective (negative affect and motives for coping) risk factors among sexual minority students. The researchers found that coping motives significantly impacted the prospective interaction between perceived discrimination and problems with alcohol (Hatzenbuehler et al., 2011). In other words, the relationship between stressors experienced by perceived discrimination and drinking behaviors was mediated by

coping motives. These coping motives included such as drinking to escape, withdraw from, avoid, or regulate negative emotions.

Not all research has found that sexual minority students are at a higher risk for developing problematic drinking. For example, Lee et al. (2016) used chi-squared tests to compare differences from a large sample-pool of 2-year, 4-year, and non-college attending sexual minority women. While non-college attending SMW were more likely to report more frequent drinking and social norms associated with drinking, 2-year and 4-year SMW were more likely to report consequences with their drinking (Lee et al., 2016). Thus, there exists small evidence that college might in fact provide a protective factor for some groups of sexual minority students, despite most literature saying that sexual minority students drink more on average in campus environments. Other studies have found that being around peers, as well as having structured communities such as residence halls and social organizations, are protective factors that assist some sexual minority students with framing their college experiences in a positive light (Longerbeam et al., 2007).

Within Longerbeam et al.'s (2007) study, sexual minority students, particularly gay men, were more likely to drink despite their perceptions of having mostly positive academic and social experiences. In fact, most of the literature reviewed overwhelmingly found that sexual minority students were more likely to drink frequently and/or have negative consequences with their drinking (Dworkin et al., 2018; Woodford et al., 2012). Additionally, drinking was used as a coping mechanism to deal with minority stress, including perceived subtle victimization and overt discrimination as a result of their sexual or gender orientation. (Hatzenbuehler et al., 2011; Winberg et al., 2019). However, given the findings of Lee et al. (2016) and Longerbeam et al.

(2007), there is evidence showing that connection with others predicts drinking behaviors for sexual minority students.

Ebersole et al. (2012) explored to what degree various protective behavioral strategies (PBS) mediated the relationship between drinking motives and negative consequences of drinking for LGBT students. The results indicated that PBS partially mediated the relationship between coping with depression motives for drinking and negative consequences. The authors contend that LGBTQ+ students likely do not have the social support systems needed for dealing with depression in the way that heterosexual students have. They hypothesize that LGBT students turn to less conventional means of coping with depression and negative affect, including drinking in social situations as a way to cope, which is why the PBS seem to help for LGTQ students drinking for those reasons. Heterosexuals students, on the other hand, are more affected by PBS when they are using drinking's for reasons such as having a good time or facilitating sociability (Ebersole et al., 2012). Heterosexual students are more likely to have support systems that normalize experiences and assists them with feeling emotionally supported during their depressive episodes, whereas LGBT students are not privileged with those same support systems.

Gower et al. (2018) noted that social support systems do have benefits for gender diverse youth (GDY) compared to cisgender youth. Connections with friends were found to protect against binge drinking as well as nicotine use. While specific prosocial behaviors of friends were not accounted for, the authors findings supported other literature demonstrating the benefit of social support groups in the lives of GDY (Gower et al., 2018). This study was not conducted with college-aged participants; these students were in high school. Both Eberson et al. (2012) as well as Gower et al. (2018) noted the benefits that connectedness might have on the drinking behaviors of LGBTQ+ individuals. Longerbeam et al. (2007) provided evidence that social

support systems in colleges moderate drinking behaviors of sexual minority students. Thus, there is a recurring theme of connectedness to the social world that appears to relate to drinking behaviors for sexual minority students. Moreover, the social environment of college campuses, including experiences with discrimination and victimization when interacting with others, is a significant predictor of poor mental health outcomes and resulting detrimental substance use to cope with this stress for LGBTQ+ students.

Social Connectedness in LGBTQ+ College Students

Social connectedness is a complex facet of human experience that involves concepts of belonging vs. loneliness, affiliation with others from a common background, and active participation in group activities with other individuals (Lee & Robbins, 1995; Masika & Jones, 2016). Social connections are a fundamental part of the college-experience, as interpersonal growth and relationship-building are appropriate developmental markers for young adults in this phase of their lives (Chickering & Reisser, 1993; Arnette, 2000). Moreover, among the general college student population, Hurst et al. (2013) found that relationships with new friends, maintaining friendships with previous friends, and understanding roles within a friend group are significant considerations of college students, based on a review of 40 qualitative studies. The majority of participants noted relationships as the prevalent stressor in their college experience. Such concerns pertaining to relationships included ruminating on, forming, and breaking up romantic relationships, navigating family responsibilities, and forming close friendships with fellow students. Additional relationship stressor included fearing social isolation, and balancing new friendships while maintaining previous ones (Hurst et al., 2013).

Within the LGBTQ community, feeling socially connected to one another community results in a higher sense of self-worth, feeling validated, and having a generally positive outlook

on life (Erosheva et al., 2015; Zeman et al., 2017). DiFulvio (2011) conducted a qualitative study to discuss social connection and resilience from sexual minority youth between 14 and 22 in rural and urban Massachusetts. Participants described their experiences of connecting to others as instrumental in solidifying their identities, forming connections in the face of isolation due to their marginalized status, and participating in LGBTQ+ related advocacy and political groups (DiFulvio, 2011). Many participants also mentioned the importance of these groups in getting them through college and achieve the milestone of successfully graduating, particularly when they came from families where most members did not graduate from college. Having mentor-like relationships, reciprocal same-sex friendships, and connections with supportive adults also helped participants feel like they could be physically or emotionally safe in a heterosexually-favored world (DiFulvio, 2011).

Social Connectedness and Drinking in LGBTQ+ Students

Mason et al. (2014a) studied peer closeness among college students, which included elements such as reciprocity and trust, and identified the relationship between these elements and substance use. Participants who have friends that they perceive to be close to them were more likely to drink if their friends were also frequent alcohol users (Mason et al., 2014a). Perceived closeness with friends who drink was also related significantly to hazardous drinking behaviors, as well as a higher likelihood of using other substances, such as marijuana. Additionally, the authors found that negative psychiatric symptoms were significantly reduced when peers felt close to their peers. I argue this is evidence for the alleviating effect that social connection has on symptoms of minority stressors, including negative mental health outcomes (Meyer, 2003; Meyer, 2015). The authors report that peer support and reciprocity is clearly related to drinking (Mason et al., 2014a), whether or not they tested that social connectedness specifically acts as a

protective buffer against detrimental drinking. Additionally, perceived closeness with others was not found to exacerbate substance use, outside of marijuana. Moreover, Mason et al. (2014b) constructed a text-message platform of alcohol-based, motivational-enhanced counseling. In addition One question included satisfaction with social network and certain recommendations included asking for support from non-drinking friends. The intervention had significant effects on enhancing the motivation for students to change.

Reid et al. (2015) found that participants with networks of accepting peers were significantly more likely to moderate their drinking from previously-detrimental levels. Conclusively, connection with others and social approval related to both improving heavy drinking behaviors and the ability for students to make healthier choices with alcohol use. Paswan et al. (2015) found a more direct link between the impact of fewer social connections (i.e. loneliness) on drinking behaviors among college students. Notably, loneliness was found to be a frequent reason for drinking among students in college settings. Loneliness was also a catalyst for heavy drinkers who are able to realize the reasons why they engage in heavy drinking. Feelings of loneliness also significantly impacted these students by increasing their motivation to quit drinking (Paswan et al., 2015).

Pachankis et al. (2014) directly acknowledged the link between the results of minority stressors, including feelings of rejection and apprehension to connect with others, and substance use behaviors among gay men. The authors found that gay men became sensitive to rejection when living in social contexts that confirmed these expectations of being discriminated through laws, policies, and structural barriers that affect sexual minorities (Pachankis et al., 2014). The results of the study implied that substance use (e.g. drinking) serves as a way to cope with these stressors, which includes both structural stigmatization and psychological expectations of these

stigmatizing events. The participants' feelings of rejection, apprehension, and difficulty in connecting with others are all correlated to fewer connections and reciprocal relationships with others (DiFulvio, 2011).

Woodford et al. (2015) argued that LGB friends might provide a unique form of social support and decrease the association between perceived discrimination and alcohol use. These findings were not relevant for participants with only one or two LGB friends but rather, for those who had a higher number of friends. Said differently, those with more opportunities for support through well-developed network of LGB peers are less likely to succumb to minority stressors. (Woodford et al., 2015). The authors also call for further studies that determine the causality of the relationship between social support from LGB friends and drinking behaviors, indicating that presently, this causal relationship is not specifically addressed by current research. This argument provides another rationale for exploring this relationship to assess for causality between these constructs to better understand the role of connections in the health outcomes of LGBTQ+ students.

Branstrom et al. (2015) reiterated that sexual minorities show a consistently-higher risk of problematic drinking and comorbid substance use, as well as mental health concerns, compared to their heterosexual counterparts. However, they wanted to determine variations within the subgroups of the LGBTQ+ community. This relationship was highest in gay men and bisexual women, implying that even within sexual minority populations, there is variation among subgroups regarding substance use behaviors and mental-health outcomes. (Branstrom et al., 2015). The authors also investigated the relationship between current stressors and the detrimental mental and physical-health outcomes of sexual minorities. Victimization, discrimination, and social isolation explained both elevated substance use and psychological

distress among the sexual minority participants. Moreover, these examples of minority stressors were the reason for the co-occurrence substance use disorders and mental health illnesses among sexual minorities whereas heterosexual participants reported different reasons for these co-occurring phenomena (Branstrom et al., 2015). These findings are congruent with Meyer's (2003) original theory of minority stress. Additionally, these findings are consistent with those of Woodford et al. (2015) where social support was a significant predictor of positive health outcomes, such as acting as a protective barrier against substance abuse.

While the aforementioned studies show the number of benefits inherent with social connectedness, there appear to be limitations with being socially connected to other students, regardless of their sexual minority status. Busby et al. (2020) studied whether levels of social connectedness to other members of the LGBTQ+ community was a mediator between experiencing instances of discrimination and suicide risk. The authors found that for most of the participants, the association between experiences of interpersonal discrimination and victimization were not mediated by self-reported connectedness (Busby et al., 2020)., Busby et al. (2020) conducted linear regressions to determine the relationship between victimization, connection, minority status and alcohol use. While minority status was not a significant predictor of heavier alcohol use, victimization and connection had significant effects for greater levels of alcohol use ($\beta = 0.141$ and $\beta = 0.100$, respectively).

However, along with these findings, Busby et al. (2020) discovered that connectedness was significantly and inversely related to suicidal ideation, number of suicide attempts, level of depression, and non-suicidal self-injury (NSSI; Busby et al., 2020). Consequently, the authors asserted that social connectedness does act as a protective factor in general for sexual minority students, regardless of the degree of victimization. Yet another argument that highlights the

benefits of social connectedness was the discovery that positive identity affirmation was a significant mediator between having experiences of interpersonal victimization and subsequent depression (Busby et al., 2020). The researchers considered identity affirmation to be a form of connectedness to other sexual minorities as well as a protective barrier against experiencing minority stressors as a member of the LGBTQ+ community.

Pflum et al. (2015) investigated the degree to which both social support and connectedness to the community assisted trans individuals with the impact of minority stressors. The results indicated that both social supports, such as community groups, and connectedness to the community at large were predictive of more positive mental health outcomes for trans individuals. The results are similar to those of Lehavot and Simoni's (2011) study of SMW, where social support systems were found to be predictive of less substance abuse. Nevertheless, Parent et al. (2019) recommended that the terms social support does not adequately separate the kind of involvement with the LGBTQ+ community that encourages drinking vs. the kind of connections that give individuals the opportunity to connect with others through advocacy and other work.

Riley et al. (2016) examined stress and coping as mediators of internalizing symptoms of discrimination, including substance use for sexual minority students vs. majority first-year students. The results indicated that sexual-minority students have different experiences that influence why they internalize symptoms of mental health distress, including substance use, to a greater degree than their heterosexual peers. Additionally, the authors recommend that future studies should identify what mediating factors would assist sexual minority students with mitigating their higher levels of distress and resulting substance use. Riley et al. (2016)

recommended social supports as a way of intervening for first-year sexual minority students before problems exacerbate later in their college career.

Thus, while the direct relationship between alcohol use, and social connection was not found within the previous study, there are significant implications for connectedness acting as a mitigating factor against many of the negative outcomes of minority stressors (Busby et al., 2020). It is reasonable to argue that if connectedness with others, such as other members of the LGBTQ+ community, has positive outcomes by helping to moderate drinking behaviors (Branstrom et al., 2015; DiFulvio, 2011; Woodford et al., 2015), and social connectedness acts as a barrier against other negative effects of minority stressors (Busby et al., 2020), there is likely a significant, inverse relationship among levels of social connection and drinking for sexual minority students. In the next section, I will address the topic of resilience and expand on how protective barriers might impact the relationship between social connectedness and drinking.

Resilience in LGBTQ+ College Students

In this section, I will review and synthesize the relevant literature pertaining to the presence of resilience in the LGBTQ+ college student population. Given the research questions being asked in this SEM model with a mediating construct and recommendations from Kenny (2018), I will discuss relationship between resilience and social connectedness, and then resilience and drinking. Resilience, as noted earlier, involves the ability to both survive and adapt while enduring adversity. Such adversity includes both everyday stressors and more specific forms of adversity such as minority stressors (Meyer, 2015). The ability to process and bounce back from adverse events has been found to be inherent in certain personality traits (Livingston et al., 2016; Meyer, 2015), as well as using forms of social support as a buffer against isolation and negative coping (Aleesi et al., 2017). Ming-Hui and Yan (2016) found that in a sample of

US, Taiwanese, and Chinese students, trait resilience (i.e. more adaptive personality traits) increased the likelihood of students using social support to reframe problems, engage in structured problem solving, and using less avoidance strategies such as heavy drinking. Interestingly, this was consistent across all cultures studied (Ming-Hui & Yan, 2016). Trait resilience includes the ability to come out of difficult times and navigate successfully following stressful events. Therefore, this definition of resilience seems to play a role in how sexual minority students respond to and cope with minority stressors.

Livingston et al. (2016) conducted regression analyses to determine the paths between minority stress, alcohol misuse, and psychological distress. The authors hypothesized that levels of psychological distress would mediate the relationship between minority stress and alcohol misuse for sexual minorities. This pathway did not exist for individuals with adaptive personality traits, such as lower levels of neuroticism, higher levels of extraversion, higher conscientiousness, higher agreeableness, and a greater openness to experiences (Livingston et al., 2016). The researchers provided an explanation that cultivating resilience can assist sexual minorities with regulating their emotions and increase their ability to seek healthy social support. Additionally, drinking is not as prevalent as a response to cope with minority stressors as those who exhibit 'at risk' personality traits (i.e. the inverse of the above Big 5 Traits) (Livingston et al., 2016). Similar to the findings in Ming-Hui and Yan's (2016) study, it appears as though when students are able to demonstrate resilience as a reaction to adverse experiences, they are able to use that social connectedness as a form of support. Moreover, this study implies that there is not only a relationship between resilience and social connectedness but that resilience also in and of itself is a protective factor against using drinking as a means to cope (Livingston et al.,

2016). However, despite the fact that in this study, resilience seems to impact social connectedness, other research has demonstrated the inverse relationship between the constructs.

Resilience and Social Connectedness

Group involvement and relationships with others can act as protective factors for sexual minorities and college students, highlighting the connection between social connection and levels of resilience. (Livingston et al., 2016; Ming-Hui & Yan, 2016; Mancini, 2012). More specifically, Mancini (2012) found that connection with others helps sexual minority students feel less isolated and engage in fewer maladaptive behaviors, such as heavy drinking. The author argued that a significant portion of LGBTQ+ individuals prevail despite the odds against them to succeed academically and grow personally in college settings. In other words, these students demonstrate the very essence of resilience. Involvement with groups of other students was a protective factor that helped them succeed despite social and political barriers that cause minority stressors (Mancini, 2012). The author found that other factors bolstering resilience included academic achievement, commitment to a degree path, strong familial and friend support, as well as having sources of financial aid. The key to each of these demonstrations of resilience included involvement, or connectedness, with other social groups, again emphasizing the impact social connectedness has on levels of resilience in sexual minority college students.

These findings are also congruent with Zimmerman et al. (2017), where the authors identified that among SMW who have experienced family rejection, they were able to form strong bonds after coming out with other SMW who also experienced family rejection. These bonds were stronger compared to their bond with SMW who came from more-accepting families. Connectedness with the LGBTQ+ community at large seems to relate to the ability to maintain resilience through difficulties caused by minority stressors. It is likely that having

shared experiences, emotional support, and ways to problem solve are ways that social connection foster resilience (Mancini, 2012; Zimmerman, 2017). Mancini (2012) also argued that sexual minority students from different races and ethnicity groups were more likely to feel uncomfortable coming out and less connected to other LGBTQ+ students on campus. The compounding stressors of racial inequalities and worrying about discrimination based on sexual-minority status compounded these students stressors due to their intersectional, marginalized identities. They were also less likely to finish school and successfully adjust to the college lifestyle (Mancini, 2012).

Resilience and Drinking

According to Lira and Morais (2018), LGB individuals have the capacity to demonstrate resilience, including positive adaptation and adaptive coping following adverse events, such as rejection or other forms of victimization. The authors explain that resilience is defined for LGB individuals as “a positive adaptation process displayed by LGB individuals in spite of the adversity faced as a consequence of their sexual minority status” (Lira & Morais, 2018, p. 274-5). The authors categorized resilience into three distinct sub-types: a) individual, b) family, and c) community resilience. These aspects of resilience bolster them from the negative effects of minority stressors, including physical and mental health outcomes such as substance use (Lira & Morais, 2018). The authors noted that through their literature review, quantitative studies identified individual resilience factors that contributed to protection against minority stressors for LGB individuals; however, qualitative analysis showed that community factors are a key part of how resilience is formed among sexual minority populations. Nevertheless, at the intrapersonal level, increased resilience factors have been found to relate directly to lowered substance use as a way of dealing with stressors (Lira & Morais, 2018). Even though resilience is more complex as

it relates to the LGBTQ+ community compared to the traditional definition, in each category of resilience, social support and connection to others is seen as a protective factor, and substance use is a gauge of whether or not individuals are positively adapting to their environment.

Woodford et al. (2015) explored the role of protective factors on LGBTQ+ individuals' experiences of heterosexism and other minority stressors on college campuses. One of the findings demonstrated that individual self-esteem was a protective factor against detrimental drinking for those who experienced high levels of heterosexist harassment. The authors postulated that a very real cause for the correlation is that LGBTQ+ individuals with higher levels of self-esteem are more immune to the instances of heterosexism and every-day instances of discrimination compared to those with lower self-esteem (Woodford et al., 2015). The compounding effects of having a poor sense of self-esteem compounds with minority stressors experiences, leaving those particular LGBTQ+ more susceptible to problematic drinking. Schmitz and Tyler (2018) conducted a qualitative analysis analyzing how resilience is cultivated and promoted among LGBTQ+ young adults in the United States. The authors found both individual and collective (i.e. socially-based) forms of resilience among their 46 participants, similar to the findings of Lira and Morais (2018).

LGBTQ+ experiences with resilience included having their identity as an LGBTQ+ person impact their ability to handle conflict, live more authentically, and cultivate stronger relationships with others, despite the discrimination and stressors they endure (Schmitz & Tyler, 2018). It is reasonable to postulate that these forms of resilience will increase the ability to cope with stressors in a healthy manner, which would impact levels of problematic drinking. Craig et al. (2013) found that a school-based resilience group for LGBTQ+ youth (i.e. those average age of 16.3 years) promoted healthy coping skills and a sense of self-esteem, even when social

connectedness did not increase. Therefore, there is significant evidence demonstrating that increasing the ability to survive and adapt in response to stressful situations leads LGBTQ+ young persons to making healthier decisions in their lives, without turning to unhelpful coping strategies such as drinking (Craig et al., 2013).

The Impact of Loneliness

Currently, LGBTQ+ students report feeling less social support than their heterosexual peers (Christie, 2020; DiFulvio, 2011). Additionally, social isolation is related to feelings of loneliness and disconnection from others (Lewis et al., 2016; Salerno et al., 2020). Specifically, heterosexual students were found to have significantly higher levels of psychological well-being and social support than LGB students. Christie (2020) found that within the LGBTQ+ students, SMW were more likely to have higher levels of social support than SMM. Notably, the study was conducted within a college that touted itself as welcoming and inclusive of sexual and gender-diverse individuals. Feelings of social isolation are particularly widespread for LGBTQ+ college students on rural, smaller campuses (Ferris & Phillips, 2016). Both outward displays of heteronormativity and subtle micro-aggressions toward LGBTQ+ students leave them feeling like they must conform to a different identity to maintain the social structure of their respective institution (Rankin, 2010). This role of social support and lack of feeling lonely is important for the LGBTQ+ student growth. Specifically, levels of social support have been found to increase the self-efficacy of LGBTQ+ college students in their professional development (Jang et al., 2020).

LGBTQ+ students are more likely to turn to drinking as a means to cope, given that there is significantly less peer support (Ebersole et al., 2012), and students might display different levels of outness regarding their sexual orientation (Reed et al., 2010). Other researchers have

noted that LGBTQ+ students might be more likely to drink at detrimental amounts in social venues (e.g. parties, designated bars) to cope with their stressors as an LGBTQ+ student, rather than drinking in a solitary environment (Grant et al., 2009). Nevertheless, the college social environment is rife with opportunities for LGBTQ+ students feeling like they do not belong. For example, the collegiate environment focuses heavily on intramural sports, which is a heteronormative activity (Longerbeam et al., 2007). Additionally, while gay men in particular felt more comfortable acclimating to the social environment and the academic demands of college, drinking was still used as a means of fitting in or feeling more comfortable in social situations (Longerbeam et al., 2007). Thus, while LGBTQ+ students are surrounded by opportunities for social connections, and even in moments when they choose to bond with others, they still feel a level of disconnect.

Morse et al. (2019) found that even when LGBTQ+ college participants were engaged in activism, which can be considered a social and interpersonally-oriented activity, they significantly more likely than other groups to engage in drug, academic, and sexual risk-taking. Additionally, loneliness is a common theme among college students broadly, as they are taken from the comforts of their family and community of upbringing and placed in an environment with new opportunities for personal and professional development (Bernardon et al., 2011). Therefore, LGBTQ+ students, who are more likely to face challenges in finding supportive peer networks (Schmidt et al., 2011), might very well face additional challenges with overcoming loneliness as they adjust to the college environment. Therefore, it is logical to conclude that LGBTQ+ students, as a result of feeling lonely, will be more likely to turn to substance as a means of coping with or escaping their loneliness given that loneliness seems to be a result of fewer or less-satisfactory social connections. Loneliness, in turn, might also not be entirely

related to the amount of peer support received if that peer support conduces detrimental drinking behavior as a way of coping with stressors (Longerbeam et al., 2007). Thus, the quality of social connection seems to matter regarding the benefits LGBTQ+ students receive from others. Relationships from others *can* be supportive and build resilience, while less-supportive connections can increase feelings of loneliness, and the need to use drinking to cope with those feelings.

COVID-19

As noted earlier, this literature review and subsequent study occurred during the COVID-19 global pandemic. Given the unique stressors that LGBTQ+ students experience as a result of their minority status (e.g. victimization, marginalization, poor mental health outcomes, substance use), these stressors are amplified during the COVID-19 pandemic (Gonzales et al., 2020). Suen et al. (2020) found that even when accounting for the common pandemic stressors individuals experience, LGBTQ+ individuals experience anxiety and depression at a disproportionate rate. Because the pandemic is a current crisis, few studies have been conducted regarding the long-lasting effects on people who are quarantined, working remotely, and in the case of students, leaving campus to take virtual classes.

Rationale for Conducting Study

Sanlo (2004) enumerated three specific themes that warranted further research based on an extensive literature review. These themes that warranted further research involved exploration of the lives of LGBTQ+ college students. Sanlo (2004) identified the following themes: a) Discrimination and coping, such as anti-gay rhetoric that causes such outcomes as social isolation; b) Health Outcomes/Effects – which can include emotional and physical health (i.e. substance use and other mental health concerns); and c) resilience and protective factors,

including inherent personality traits and community involvement, that helps build coping strategies and feelings of thriving and surviving in the face of adversity. The author makes the argument that such research would be important for purposes of retention data and helpful for student affairs departments when serving students on campus (Sanlo, 2004).

Moreover, these themes appear to impact one another and are congruent with the reviewed literature pertaining to sexual minority student alcohol use, social connectedness and how the relationship between those two constructs is mediated by resilience factors. To date, even 16 years later, there is not a singular study that the author can find that succinctly and quantitatively identifies the relationship between general social connectedness, alcohol use, and resilience factors among sexual minority students. Thus, I argue the necessity for a quantitative research design that addresses whether or not a pathways exists between social connectedness and drinking, and to what extent the relationship exists when resilience factors are considered. Below, I will address my rationale for the design of the study using a quick overview of the benefits of using structural equation modeling (SEM; Fassinger, 1987).

Initial Research Design

For this study, I have chosen to quantitatively evaluate the relationships between known measures pertaining to social connectedness, drinking behaviors, resilience, and loneliness for sexual minority students. The literature thus far has successfully described the impact of minority stressors, social isolation among LGBTQ+ students, and how feelings of resilience provide a protective buffer against minority stressors. However, to the author's knowledge, there is not one current study that highlights and investigates the relationship between these four constructs, either quantitatively or qualitatively. Because enough qualitative literature exists pertaining to the lived experience of minority stressors, resilience factors, and relationship with health

outcomes for sexual minority students (e.g. DiFulvio, 2011; Lira & Morais, 2018), a quantitative approach appears warranted to evaluate the strength, direction, and mediating influences of the hypothesized relationship. Fassinger (1987) describes the benefits of using structural equation modeling (SEM; Fassinger, 1987) in counseling-related research. SEM allows researchers to determine causal patterns between unobserved variables, psychometrically evaluate data measures, and enhance the ability of correlational data to explain relationship between constructs (Fassinger, 1987).

CHAPTER THREE- METHODOLOGY

The third chapter reviews the methodology, research design, and procedures taken to carry out the design. The purpose of this study was to see whether not levels of social connectedness affected levels of drinking for LGBTQ+ students. The author sought to discover whether trait resilience mediated the relationship between sexual minority students' level of connectedness and their drinking behaviors. The primary research question was whether the relationship between social connectedness (as measured by the SCS-R; Lee & Robbins, 1995) and frequency of alcohol use (as measured by the AUDIT; Daeppen et al., 2000) of LGBTQ+ college students will be mediated by their levels of trait resilience (as measured by the BRS; Smith et al., 2008) and loneliness (as measured by the UCLA-R; Russell et al., 1980), depending on the hypothesized quality of the relationships or types of environments in which they are socially-engaged.

There were also a number of exploratory questions being asked during this study. The first research question was whether LGBTQ college students' degree of social connectedness (as measured by SCS-R; Lee et al., 2001) is significantly related to their levels of resilience (as measured by the BRS; Smith et al., 2008), loneliness (as measured by the UCLA-R; Russell et al., 1980), their frequency and consequences of alcohol use (as measured AUDIT- Daeppen et al., 2000), and COVID-19 related anxiety. I hypothesized that higher scores of SCS will be positively, significantly related to scores on the BRS, significantly and negatively related to scores on the UCLA-R, and inversely and significantly-related to scores on the AUDIT. This study also sought to answer the question as to whether or not LGBTQ+ students vs. heterosexual students significantly differed in their levels of social connectedness, resilience, loneliness, and drinking. Based on the aforementioned literature in Chapter Two, it appears as though significant

differences are likely between the two groups. I hypothesized that LGBTQ+ students would be significantly less connected, less resilience, lonelier, and more hazardous drinkers compared to their heterosexual counterparts.

A descriptive, correlational research design was employed to answer the research questions (Crockett, 2012). A correlational design was deemed appropriate because the purpose of this investigation was to determine whether or not a directional relationship existed between sexual minority students' levels of social connectedness, their drinking frequency, and whether or not that relationship was mediated by the levels of traits resilience participants' possessed. No intervention nor manipulated variable was introduced, therefore, a correlational design was suitable (Wallen & Fraenkel, 2001).

Possible threats to both internal and external validity are addressed, particularly as they relate to correlational designs. Additionally, the specific procedures used to conduct the research were addressed. These include institutional review board (IRB) approval, methods of collecting data, instrumentation and related psychometrics, as well as analysis of the data. Potential limitations within this design and ethical considerations are discussed. The chapter presents the aspects of Chapter Three in the following order: (a) a rationale and overview of the method; (b) participant selection and procedures; (c) instrumentation; (d) research hypothesis/questions; (e) methods of data analysis; (f) ethical considerations; and finally (g) limitations to and considerations of the study.

Rationale for Method

It is reasonable to argue that if feeling more socially connected with others has positive outcomes by helping to mitigate drinking behaviors (Branstrom et al., 2015; DiFulvio, 2011; Woodford et al., 2015), and social connectedness acts as a barrier against other negative effects

of minority stressors (Busby et al., 2020), there is likely a significant, inverse relationship among levels of social connection and drinking for sexual minority students. Regarding mediating constructs, studies intimated a relationship between social connections and drinking for sexual minority students (Livingston et al., 2016; Mancini, 2012). Despite Sanlo's (2004) recommendations for continued exploration, 16 years later, there is not a singular study that the author can identify which quantitatively explores the relationship between social connectedness, drinking, and resilience among sexual minority students. However, there is an abundance of literature that alludes to the likelihood of a relationship.

Method

This research study will be cross-sectional, correlational study using survey methodology to examine the relationship between social connectedness, resilience, and drinking behaviors among sexual minority college students. The methodology will be based on structural equation modeling to examine the model described.

Sample Size Determination

I specified on a target population of sexual minority students in residential colleges between the ages of 18-28. The age of students was expanded to account for the rise of non-traditional students from various age groups in college, outside of the traditional 18-22 age range (Pelletier, 2010). Regarding the focus on sexual minorities, research indicates that sexual minority students are at a greater risk for developing detrimental drinking behaviors (Woodford et al., 2012; Winberg et al. 2019), feel less socially connected in supportive environments, which impacts their drinking (Woodford et al., 2015), and have varying levels of trait resilience that help them feel resilience in spite of minority stressors (Livingston et al., 2016).

Representativeness of the sample was important for the generalizability of the data to the

larger population of sexual minority students in college settings (Dickinson et al., 2012). Representativeness of the sample is not only important for generalizability of the data, but also when deciding upon the sample size of a study (Dickinson et al., 2012). The American College Health Association found that in 2016, 10% of more than 33,000 students identified as LGBTQ+ (PNPI, 2020). If 10% of students identifying as LGBTQ+ is a statistically stable estimate for the larger population of 4-year college students (~10.8 million), then a recommended minimum sample of participants is 400 (Krejcie & Morgan, 1970). However, given the constraints of working with a hidden, vulnerable populations (Guillory et al., 2018), a total of 253 students, 135 of which were LGBTQ+ were recruited.

Given the requirements of an SEM analysis, I determined an appropriate estimate of power. Statistical power refers to the probability of rejecting the null hypothesis when it is in fact false; in other words, statistical power is the probability of not making a Type II error (Wolf et al., 2013). The power was based on the effect size, sample size, and alpha level; additionally, statistical power should be conducted a priori to avoid making a Type II error (Wolf et al., 2013). Statistical power helps determine the sampling size needed in an SEM (Crockett et al., 2012; Dickinson et al., 2012; Wolf et al., 2013).

Methodology

Model Specification

Before statistical analysis is conducted, I conducted confirmatory factor analysis (CFA), to ensure that the scale's individual items measure the intended construct. Specifically, CFA was used to assess the measurement model (Weston & Gore, 2006). The measurement model used the CFAs to psychometrically evaluate the scales and the constructs they are designed to measure, by individual scale items. As Weston and Gore (2006) note, the more psychometrically

sound an instrument, the more likely that construct will be found in the data. The latent variables being tested, including social connectedness, drinking, and resiliency, were defined more I indicated statistically the measurements being used depicted that construct accurately (Weston & Gore, 2006).

Model Identification

In this step of the process, the author limited any paths that are not part of the original theory driving the model. Specifically, in order for the equations to be solved in an SEM, one path from a latent variable to a measured variable was fixed (Norman & Streiner, 2003). In this step of the process, there are two main types of variables- *free variables* and *fixed variables*. Free variables included variables that can assume any value or are estimated to a specific value as determined by the SEM equations. Fixed variables, on the other hand, were set to a value of one, which will be determined in advance (Norman & Streiner, 2003).

Model Estimation

According to the recommendations of Norman and Streiner (2003), I proceeded to estimate the model with appropriate constraints placed on the pathways. While a few methods of estimation exist, most researchers recommend to use the maximum likelihood method, which does not require restrictive requirements in scale measurement uniformity or number of participants. However, under the maximum likelihood principal, an assumption of multivariate normality was made; in other words, all the variables are normally distributed when looked at as a whole. If the scales were ordinal, with ranked data, or there is significant skewness, other methods exist; however, those modifications were not relevant for the current study (Norman & Streiner, 2003).

Test of Fit

I employed the χ^2 test to determine if the model is an exact fit of the data (Weston & Gore, 2006). Then the RMSEA, TLI, and SRMSR will be consulted as recommended by MacCallum and Austin (2000) and Weston and Gore (2006). Once the fit of the model was determined, I compared the indices to their thresholds and whether significance was found upon the first test. Further re-specification was considered if the model was not an adequate fit (Norman & Streiner, 2003).

Re-specification of the Model

If the model was not an adequate fit, I re-specified the model to see if directions or pathways could be appropriately modified to depict the data more accurately. Any specifications were supported by either theory or relevant literature pertaining to the constructs (Norman & Streiner, 2003).

SEM Fit Indices

I consulted certain recommended fit indices to assess thoroughly whether and to what extent the model fits the data. Specifically, I first found the chi-squared value (i.e. χ^2) to indicate fit of the model (Weston & Gore, 2006). It is worth noting that the model was likely to not be a perfect fit for the data and thus additional fit indices were used that account for approximation, rather than exactness of fit. Furthermore, the Chi-square is sensitive to sample size; thus, CMIN/DF was used which accounts for degrees of freedom within the model (Parry, 2016; Weston & Gore, 2006). This is a more accurate representation of a Chi square value that is not as sensitive to number of participants; original value which does not account for degrees of freedom within a measurement model.

I utilized fit indices as recommended by MacCallum and Austin's (2000) guidelines for conducting structural equation modeling in psychological research. Accounting for approximate fit, I conducted an analysis to determine the root mean square error of approximation (RMSEA) of 0.08 for null and alternative values (MacCallum et al., 1996). I also utilized guidelines for the Comparative Fit Index (CFI; Bentler, 1990) as another fit index for the data. Regarding CFI, values ranged from 0.0 to 1.0. The closer the data is to 1.0, the better fit the model was for the data (Weston & Gore, 2006). I determined the Standardized Root Mean Square Residual (SRMSR; Weston & Gore, 2006), which if the value was exactly 0.00, indicated less of a significant difference between the correlations in the data and the proposed model. The cutoff used for the SRMSR will be 0.08 (Lewis, 2017; Weston & Gore, 2006). Finally, the Tucker Lewis Index (TLI; Parry, 2016) was used, which is another name for the Non-Normed Fit Index. This cutoff score for the TLI was 0.90, similar to the CFI (Parry, 2016). Below, in Table 1, an overview of the fit indices was provided with recommended cut-off scores. The ideal sample size, given statistical power requirements of SEM and good practice within methodology guidelines, was a minimum of 100-200 participants. (Tabachnick & Fidell, 2018; Wolf et al., 2013).

Table 1

| <i>Description of Fit Indices</i> | | |
|--|---|---|
| Fit Indices | Description | Cutoff Criteria |
| Chi-square | Comparison between predicted and observed covariance matrix. Sensitive to sample size where larger sample size is likely to cause χ^2 to be significant (Weston & Gore, 2006). | Acceptable model if χ^2 is not significant. The ratio of χ^2 to df should be less than 3. |
| Comparative Fit Index (CFI) | Compares the fit of a target model to the fit of an independent or null model. Not sensitive to sample size (Parry, 2016). | > .90 is acceptable $\geq .95$ is a strong fit |
| Root Mean Squared Error of Approximation (RMSEA) | Indicates a parsimony-adjusted fit. where lower values indicate a better fit (MacCallum et al., 1996). | .05- .08 is acceptable $\leq .05$ is a good fit |
| Standardized Root Mean Square Residual (SRMSR) | Square-root of difference between residuals of sample covariance matrix and hypothesized model. Lower values are a better fit (Parry, 2016). | <0.08 |
| Tucker-Lewis Index (TLI) | A non-normed fit index which indicates the level to which the model improves the null model. Used for small samples (Parry, 2016). | >0.90 |

Chart adopted from Lewis (2017); Parry (2016); Weston and Gore (2006)

Sampling Procedure

As mentioned previously, LGBTQ+ college students between the ages of 18-28 were the population of interest for this study. The target population included all individuals who identified as LGBTQ+ in the school utilized for the sample. Requirements included being within the identified age range; however, participants were included regardless of race, ethnicity, or other

demographic variables. Researchers have noted that sampling is appropriate to make generalizations about populations of interest, and that when researchers include the boundaries of a study, the generalizability of the findings is more valid than if boundaries were not included (Kukull & Ganguli, 2012). Additionally, purposive sampling was appropriate and perhaps offers some advantages that probability sampling does not when recruiting participants who are LGBTQ+ or engage in same-sex behaviors (Prah et al., 2016).

Given the literature pertaining to recruiting these populations, the study incorporated purposive sampling through local universities, specifically recruitment of participants through their LGBTQ+ centers on campus, or centers related to diversity and inclusion. Local schools were found through list-serves as well as snowball sampling given recommendations from points of contact. The sample was representative of urban, suburban, and rural settings and also represented schools from out the state to increase generalizability of the findings. I reached out to 4-year universities after IRB approval was given and made contact with directors, employees, and other staff members in those departments. Schools initially contacted for participant recruitment came from personal and professional connections from the researcher. These include participants from (a) William and Mary, (b) Old Dominion University, (c) Virginia Commonwealth University, (d) Virginia Polytechnical Institute, (e) University of Central Florida, (f) University of San Diego, and (g) University of Clear Lake- Houston. Because these schools were geographically diverse and thus, increased the likelihood of generalizability, I felt more confident about using these schools as a starting point for collecting participants.

I attempted to collect the minimum of 400 participants from these universities, as validated by the power analysis on the GPOWER software (Erdfelder & Buchner, 1996). This was attempted using the sampling procedures described, while the measures and all instructions

to complete the survey were organized within the survey software, Qualtrics (www.qualtrics.com). The research indicates that response rates on surveys increase when multiple methods of distribution are used (e.g. online and in-person) (Dillman et al., 2009). Anticipated response rates for in-person distribution will be higher, around 90%-100% (Mullen et al., 2014) compared to online-distribution, such as through email, which has response rates as low as 15% (Dillman et al., 2009; Mullen et al., 2014). Moreover, if initial response rates were lower than anticipated for in-person administration for the aforementioned universities, additional consultation was sought as to what universities are feasible to travel to, financial, time and COVID-19 pandemic constraints.

Moreover, convenience sampling, particularly homogenous convenience sampling where the samples have one or more sociodemographic quality in common (e.g. LGBTQ+ status), has been found to minimize disadvantages related to limited generalizability (Jager et al., 2017). Therefore, this method was a viable source of sampling, particularly in research where probability samples would be difficult to gather. I was not able to employ face-to-face data collection to ensure an ample number of participants and to increase the generalizability of the data (Saloniki et al., 2019) due to the COVID-19 pandemic. Priority consideration was given to a sample of schools that represent a variety of geographical locations (urban, suburban, rural) to ensure higher generalizability of the findings.

Due to restrictions from COVID-19 global pandemic, researchers have recommended conducting distant assessments when possible, either through phone or online (Padala et al., 2020; Townsend et al., 2020). Reasons for transferring to an online platform include the ease of recruiting participants that otherwise would not be available face-to-face and safety measures.

Notably, even for participants whose veracity is suspect, the authors identified three solutions to this problem: a) utilize demographic questionnaires to determine eligibility before disclosing the purpose of a study, b) using filters to assign participants from the desired study to a different study based on demographics, and c) offering a chance for incentives for participating.

Sampling methods are primarily categorized into two broad categories- probability and non-probability sampling. Probability-based sampling methods are when each subject in a target population of interest has an equal chance of being selected to participate in the study (Elfil & Negida, 2017). Non-probability sampling methods involve processes where the sample population is comprised of participants that do not have an equal chance of being selected from the target population (Elfil & Negida, 2017). Probability sampling involves simple random sampling, stratified random sampling, systematic sampling, and cluster sampling methods. The primary advantages for probability sampling methods for this study were achieving results that are closest to those of the actual target population and therefore, are more generalizable, being cost-effective, and simplistic to implement (Singh, 2015). However, logistically, probability-based sampling methods are difficult because all members of a population were not available, rendering this method of recruitment unfeasible for this study. Additionally, probability-based sampling does not always guarantee a representative sample, depending on the specific method utilized (Singh, 2015).

Data Collection

The author sought approval from Institutional Review Board (IRB) before any research was able to be conducted or any participants were contacted. The application to the IRB included Human Research Protocol form, a copy of informed consent made available to participants, and all forms and assessments used within the study. Once IRB approval was obtained, initial contact

was made to local university LGBTQ+ centers. I ensured that geographical location is varied (e.g. suburban, rural, and urban) from the universities, even when face-to-face recruitment was not able to happen. Additionally, universities were selected via feasibility of the data collection based on my time commitments and financial means (i.e. some universities contacted would not recruit participants without a guaranteed incentive for students).

Participants were obtained using a purposive sample selected from universities around the country. Each university sampled was a 4 year program, with the majority of its students living on-campus, nearby campus, or at home as a result of the COVID-19 pandemic. Thus, any schools with the majority of students identifying as commuters were not sought for participation. Programs selected for participation were based on willingness of all relevant student affairs departments agreeing to participate in this survey by distributing emails, gauging student interest, and accepting the terms of the incentive offer provided. Each email distribution included a minimum of eligibility requirements, the participant rights, the study purpose, and my contact information. An online link was employed as the main method of data collection. This would include the link to the survey set up via Qualtrics (2013) in which I would be able to share the link with others. Instructions for participation, an informed consent, rationale of the study, and qualifications for participation were given for participants to read thoroughly and agree to before participating (See Appendix C). Participants qualified for a random lottery where they can win a \$25.00 Amazon gift card as compensation for their participation.

The research investigated the a-priori SEM model showing the relationship between social connectedness, resilience, hazardous drinking, and loneliness among LGBTQ+ college students. Participants participated in a demographic survey, and answered items in each of the measures described below. Participants had an opportunity to email me with any questions or

feedback pertaining to the survey. The American Counseling Association [ACA] Code of Ethics (ACA, 2014) requires that researchers offer opportunities for participants to follow up with inquiries pertaining to the study. Following other guidelines in the code of ethics (ACA, 2014) participants were that participation is voluntary; however, they did not qualify for the incentive if they chose to withdraw their answers.

Measures

The four instruments that were used in this study are the following: (a) *The Social Connectedness Scale – Revised* (SCS-R; Lee & Robbins, 1995); (b) the *UCLA Loneliness Scale-Revised* (UCLA-R; Russell et al., 1980); (c) the *Brief Resilience Scale* (BRS; Smith et al., 2008); (d) the *Alcohol Use Disorders Identification Test* (AUDIT; Daepfen et al., 2000), and a subscale of (e) the *COVID-19 Phobia Scale* (Arpaci et al., 2020). I used a demographic survey to collect relevant information. Below, the instruments are described in greater detail, including content covered, item analysis procedures, and psychometric properties.

General Demographic Questionnaire

The study utilized a questionnaire to collect relevant data on participants. This data included (a) ethnicity/race, (b) age, (c) sexual orientation, (d) gender orientation, (e) school location (e.g. rural, suburban, urban), and (f) year currently in their undergraduate studies. In order to support evidence for the face validity of the questionnaire, the dissertation committee and other research colleagues reviewed the items (i.e. an expert review).

SCS-R

The SCS-R was used to measure participants' level of social connectedness. This scale is used to measure social connectedness as a psychological sense of belonging and a cognitive understanding of the self in relation to others (Lee et al., 2001) The SCS-R is a self-report

assessment that consists of twenty items examining participants' level of connectedness to others in their social environment. The original SCS scale was comprised of two subscales- (a) Social Connectedness and (b) Social Assurance (Lee & Robbins, 1995). The revised addition included a revision of negative worded items that might confuse respondents. Thus, 10 positively worded items were added and 2 negatively worded items to bolster accurate representation of the construct. Original items were also revised for mild deficiencies in conveying desired content (Lee et al., 2001). The scale includes 20 items, with such examples as 'I feel disconnected from the world around me' And 'I have no sense of togetherness with my peers'. Responses to the scale range from 1 (*Strongly Agree*) to 6 (*Strongly Disagree*). When the final tally of items is taken, a higher score indicates more social connectedness with others.

Psychometric Properties of the SCS-R

While the target population originally included only high-school students (Lee & Robbins, 1995), there is evidence for reliability and validity of the scale with college student populations, as well (Lee et al., 2001). Specifically, the revised version of the scale in Lee et al.'s (2001) study was conducted with a population of $N=442$ college students from the Northwestern United States. The measure has good internal consistency with Cronbach alphas at or above 0.92 for the total score, which is deemed as higher than the recommended cutoff of 0.80, according to Cohen (1988). The authors demonstrated concurrent validity of the scale by analyzing the scale against existing measures of loneliness, finding a significant correlation between social connection and loneliness ($r = -.80$) (Lee et al., 2001). Moreover, concurrent validity was demonstrated by social connection correlating significantly with measures of independent self-construal ($r = 0.37$), social avoidance ($r = -.55$) and distress ($r = -.55$). The authors also demonstrated evidence for convergent validity of the SCS-R. Regarding convergent validity, the

SCS-R was found to be positively correlated with measures of both independent self-construal and collective self-esteem. (Lee et al., 2001). Evidence for discriminant validity was also found as the SCS-R was not significantly correlated with measures of collective identity, somatization, and obsessive-compulsiveness.

BRS

The BRS was designed as a scale that measures resilience as being able to bounce back from stressful events, being related to resilience outcomes, and finally, being resilient to health outcomes (Smith et al., 2008). The authors created a scale with as few items as possible ($n = 6$ items) to assess the most basic meaning of resilience (i.e. ‘to bounce back from stress). The scale includes such items as ‘I tend to bounce back quickly after hard times’ and ‘I have a hard time making it through stressful events’. The scale includes three of six total items that are reverse coded (Smith et al., 2008). The original scale was tested on four different samples including two sample populations of undergraduate students, for a total of 192 students. The last two samples were cardiac rehabilitation patients and a group of women who either had fibromyalgia or healthy controls (Smith et al., 2008).

Psychometric Properties of the BRS

A principal components analysis (PCA) was conducted to assess the factor structure and reliability of the scores. The results of each sample determined a one-factor solution that accounted for 55-67% of the total variance. The internal consistency was good and consisted of a Cronbach alpha ranging from 0.80 to 0.91 for the four samples (Smith et al., 2008). This is above the recommended guidelines for demonstrating strong evidence of reliability (Cohen, 1988). The authors also demonstrated convergent validity as the BRS was positively correlated with resilience measures, optimism and purpose in life. Smith et al. (2008) demonstrated discriminant

validity by confirming that the BRS was negatively related to predicted stress, anxiety, depression, and other physical symptoms.

UCLA-R

The UCLA Loneliness Scale, revised version, (UCLA-R) was revised to account for bias in low vs. high-trending scores in the original scale which had all positively-worded items (Russell et al. 1980). Additionally, the scale was revised to increase the discriminant validity of the original measure of loneliness vs. a measure of depression. Items include 'I feel in tune with the people around me', 'There is no one I can turn to', and 'No one really knows me well.' The Likert-scale options for responses includes 1 (*Never*), 2 (*Rarely*), 3 (*Sometimes*), and 4 (*Often*) (Russell et al., 1980). The following psychometric properties were found providing evidence for reliability and validity of the UCLA-R.

Psychometric Properties of the UCLA-R

The UCLA-R was tested against both male and female-identifying psychology class students at UCLA. Russell et al. (1980) ensured cross-validation of the internal consistency with the original scale and found that an alpha coefficient of 0.94, which is considered a very strong score of reliability (Cohen, 1988). Additionally, the correlation between the original scale and the revised scale was 0.91, indicating evidence for high similarity between scores of both measurements of loneliness. Russell et al. (1980) also demonstrated evidence of concurrent validity of the UCLA-R and a measurement of the amount of time students spent alone each day. They also noted evidence of discriminant validity where the scale measured specifically for loneliness and not other aspects of participants' moods or personality traits.

AUDIT

The AUDIT is a 10-item, self-administered survey with items related to alcohol-dependent behavior and the presence of hazardous drinking. The AUDIT was developed by the World Health Organization (WHO; Saunders et al., 1993) as part of a larger collaboration to develop a screening instrument that measures hazardous alcohol consumption. There are three particular domains: (a) alcohol intake, (b) potential dependence on alcohol, and (c) experience of alcohol-related harm. Responses to each question are scored from 0 to 4, with a higher total more indicative of hazardous drinking. Regarding the validity of the scores, 92% of participants in the original survey who had an AUDIT score of 8 or more (the recommended cutoff) were diagnosed with having problematic drinking. Additionally, 94% of those with non-hazardous consumption had a score of less than 8. The first three items of the AUDIT (i.e. AUDIT-C) has been demonstrated to be effective in measuring hazardous drinking in college populations; thus, this subfactor of the AUDIT was also used in the correlation analyses, MANOVAs, and re-specified SEM model (DeMartini & Carey, 2012).

Psychometric Properties of the AUDIT

The AUDIT has a Cronbach-alpha of 0.85, above the recommended threshold for strong evidence of reliability (Cohen, 1988), for the total scores. The authors also demonstrated strong evidence of discriminant validity (Daeppen et al., 2000).

COVID-19 Phobia Scale

The COVID-19 Phobia scale is a 20 item, recently psychometrically assessed measurement of phobias and specific economic, social, psycho-somatic and psychological responses to the current COVID-19 pandemic. The self-administered survey involves phobias that meet the DSM-V criteria (Arpaci et al., 2020). I specifically used the social phobia factor as

a measure of COVID-19 related anxiety to appropriately account for how the pandemic is effecting the data collected. The items included ‘The fear of coming down with coronavirus seriously impedes my social relationships’ and ‘I am unable to curb my anxiety of catching virus from others’. Items were scored on a 5-point Likert scale from ‘Strongly Disagree’ to ‘Strongly Agree.’ Apraci et al. (2020) demonstrated evidence for construct, convergent, and discriminant validity of the entire scale, and reliability with a Cronbach alpha of 0.85 on the social scale. It’s important to note that the COVID-19 Phobia scale is a relatively recent addition to the literature in response to a current global health crisis and thus, additional psychometric testing is highly encouraged.

Primary Research Questions

Because we tested a mediation model and analyzing associations, I used structural equation modeling (Tabachnick & Fidell, 2018). See Appendix A for the current, simplified proposed model. Data analysis began by analyzing any missing data, as is recommended when conducting statistical analysis (Cresswell, 2014). Additionally, I met the assumptions required to conduct an SEM. The research questions were below:

1. Is the relationship between social connectedness (as measured by the SCS-R; Lee & Robbins, 1995) and level of alcohol use (as measured by the AUDIT; Daepfen et al., 2001) of LGBTQ+ college students mediated by their levels of trait resilience (as measured by the BRS; Smith et al., 2008)? I hypothesize that the relationship was mediated by resilience.
2. Is this relationship between social connectedness and level of alcohol use mediated by feelings of loneliness (Russell et al., 1980)? I hypothesized that the relationship was mediated by loneliness.

3. I also used regression to confirm the statistical power of the SEM analysis. Thus, I use confirmation analyses for the question of ‘Whether social connectedness predicts alcohol use and whether this relationship was mediated by resilience and/or loneliness?’

Exploratory Research Questions

The following questions were used for the exploratory analysis:

- a. Was there a statistically significant difference between LGBTQ+ participants and heterosexual participants on the constructs investigated in the study? I hypothesized they would differ on each construct.
- b. What was the relationship between COVID anxiety and the other constructs, as well as the relationships between each construct? I hypothesized that all would be significantly correlated except for COVID-19 anxiety

Statistical Analysis- Structural Equation Modeling

I used SEM as the main method of answering the research question. SEM is a general term describing a number of statistical models that evaluate the viability of proposed theories based on empirical data (Wu & Lei, 2007). SEM is a combination of confirmatory factor analysis (CFA; Schreiber et al., 2006) and multiple regression, given that it is a confirmatory technique. However, SEM allows for the possibility of exploring relationships among the latent variables (Fassinger, 1987; Schreiber et al., 2006). A complete SEM is comprised of two primary components: (a) a measurement model that highlights the relationship between the measurable (i.e. observed) variables and the latent variables that are acting as approximations (Fassinger, 1987; Wu & Lei, 2007) and (b) structural model that highlights the causal among latent (i.e. unobserved) variables. SEM consists of a statistical framework that is an extension of general

linear model procedures including ANOVA and multivariate regression analysis (Wu & Lei, 2007). The primary goal of SEM is to assess whether a hypothesized theoretical model is consistent with sample data in order to test the viability of the proposed theory (Wu & Lei, 2007).

The proposed model in this study consisted of variables that are directly observable. It also consisted of latent variables that while are not directly observable, were quantifiable. Latent variables were represented as ovals in the final model, while directly observed variables were represented as squares. As is typical with SEM, directional arrows and curved lines within the model referred to the hypothesized relationship among the variables based on the literature reviewed. SEM comprised of six major steps which include, a) specification of the model, b) model identification, c) selection of measures, d) estimation of model fit, (e) re-specification or modification of the model, and (f) according results that will be analyzed (Keith, 2015; Norman & Streiner, 2003). These steps are explained and expanded upon in the above section under Methodology. I also conducted regression analyses to confirm the results of the SEM (and statistical power), given the sample size acquired. SEM is a series of repeated regressions; thus, this analyses was appropriate (Fassinger, 1987).

Correlations

Correlations are among the most common of statistical analyses used. Using a single value, the degree of relationship between two variables is able to be evaluated (Liu et al., 2016). Correlations range from -1 to +1; negative values indicate an inverse relationship between constructs where one decreases as another increases. Positive values indicate a relationship that indicates as one construct increases, so does the other (Lieu et al., 2016). The degree of the relationship between variables is noted by the following- a small relationship indicates values of

0.20-0.35, a moderate relationships is between 0.36 and 0.65, and a strong relationship is between 0.66 and 1.00 (Kiess & Green, 2010). I employed correlations to answer the question about whether statistically significantly relationships exist between social connectedness, drinking, resilience, and loneliness.

Statistical Assumptions of Correlations

Pearson's r is the value measuring a linear relationship between two variables. Pearson's r can only be used when the following statistical assumptions are met: a) the variables are interval or ratio, not categorical or ordinal, b) there are no statistical outliers, c) the variables are normally distributed, and d) the data are linearly related, not curvilinear or another type of relationship (Liu et al., 2016; Sarmento, n.d.). Because Pearson's r requires normally distributed data, it is considered a parametric statistic. Spearman's Rho, another value of correlational relationship between variables, relies on the same assumptions as that of Pearson's r except it does not require normally distributed data, and thus is considered a non-parametric statistic (Sarmento, n.d.).

One-Way Multivariate Analysis of Variance

The one-way Multivariate Analysis of Variance (MANOVA) was used to test the differences between the four constructs of social connectedness, resilience, drinking, and loneliness between groups that differ on one categorical variable- sexual orientation (Leech et al., 2019). The MANOVA was used to first determine significance when all the dependent variables are assessed before individual Analyses of Variances (ANOVAs) were conducted to determine which constructs differ between the two groups (Leech et al., 2019). The MANOVA and resulting individual ANOVAs was used to answer the exploratory question as to whether or not there are significant differences between a linear combination of scores social connectedness,

drinking, resilience, and loneliness between the two sexual orientation groups (LGBTQ+ and heterosexual).

Statistical Assumptions of MANOVA

The assumptions of the one-way MANOVA include independent observations (i.e. one participant's score is independent of another participant's score), multivariate normality, and homogeneity of variances across groups. Additionally, there should not be multicollinearity between the dependent variables (Leech et al., 2019). While multivariate normality requires scatterplots via SPSS to estimate a best guess, Levene's statistic was employed to test for homogeneity of variances. The design of the study has been structured so that independent observations occur.

SUMMARY

In Chapter Three, I provided an overview of the statistical methods used for this study. I (a) described the process of constructing and analyzing an SEM, (b) described sampling, (c) data analysis and research questions, (e) a psychometric evaluation of the measures used, and (f) a description with statistical assumptions of the analyses. In Chapter Four, I will provide an in depth analysis of the results based on the questions.

CHAPTER FOUR: DATA RESULTS

In Chapter Four, I present the results of the research hypotheses in addition to other exploratory questions investigated. The purpose of this study was to examine the relationships between social connectedness, resilience, and drinking in a sample of LGBTQ+ college students. The analysis tested the theoretical framework that social connectedness of LGBTQ+ college students (as measured by the *Social Connectedness Scale* [SCS-R; Lee et al., 200]) significantly predicts their levels of resilience (as measured the *Brief Resilience Scale* [BRS; Smith et al., 2008]), loneliness (as measured by the UCLA Loneliness Scale (as measured by the *UCLA Loneliness Scale – Revised* [UCLA-R; Russell et al., 1980]) , and levels of drinking (as measured by the *Alcohol Used Disorders Identification Test* [AUDIT; Daepfen et al., 2000]). Additionally, I tested the function of resilience as a mediator for the relationship between social connectedness and drinking, and separately, the function of loneliness as a mediator for the relationship between social connectedness and drinking. Put another way, the more socially connectedness participants are, the higher levels of resilience (e.g. ability to bounce back from stressful events) they will report, and in turn, those with higher levels of resilience will report lower scores on the AUDIT (e.g. less drinking, related behaviors, and consequences).

Additionally, if participants report a lower sense of connectedness to others, they will likely report feeling higher levels of loneliness (e.g., emotional and social isolation), which would in turn lead to higher levels of drinking. I also investigated the levels of the aforementioned constructs, in addition to COVID-19 anxiety, within heterosexual students as compared to LGBTQ+ students. Specifically, the exploratory questions included whether there was a statistically significant mean difference between LGBTQ+ participants and heterosexual

participants on the constructs investigated in this study. This included a comparison of overall scores in all constructs to determine general differences between the two populations (e.g. were LGBTQ+ participants less connected, lonelier, less resilience, and drank at higher levels?). Finally, I investigated the relationship between COVID anxiety and the constructs; specifically, whether or not any aspects of the COVID social anxiety questionnaire predicted scores on any of the constructs for all participants.

The research hypotheses were explored using (a) Spearman Rho correlations, (b) Structural Equation Model (SEM), (c) multiple regressions, and (d) Multivariate Analysis of Variance (MANOVA). The results are presented in this chapter in the following order: (a) sampling and data collection procedures, (b) descriptive statistics used to examine the demographic data, (c) reliability and factor analyses of the measurement models used for the analyses, and (d) data analysis per the research questions (primary and exploratory). In this chapter, I also cover sampling and data collecting procedures, data screening, descriptive statistics, and data analysis for the primary and exploratory research hypotheses.

Sampling and Data Collection Procedures

In this study, I recruited participants who identified as a full-time, undergraduate college student between the ages of 18-28 and also identified as LGBTQ+. The LGBTQ+ identity included those who self-identified as bisexual, gay, heterosexual (straight), lesbian, pansexual, queer, or unsure. This study did *not* include those who were part-time students, full-time students at community or junior colleges, or those outside the age range specified. As noted earlier, the American College Health Association found that in 2016, 10% of more than 33,000 students identified as LGBTQ+ (Post-Secondary National Policy Institute [PNPI], 2020). Soper (2021) based on an analysis of observed vs. unobserved variables, a desired effect size of 0.3, statistical

power of 0.80, and an alpha level of 0.05, that a minimum of 137 participants were needed. Additionally, the original recommended minimum sample size to ensure the generalizability for a random sample was 400 based on Krejcie and Morgan (1970).

To meet this sample size goal, I recruited participants in primarily an online format, following best protocols recommended from Dillman and colleagues (2014). First, in order to increase geographical representativeness of the participants, I decided to contact schools in multiple regions of the United States, including Southwestern, Southeastern, Mid-Atlantic, Northeastern, Midwest, Pacific Northwest, and West-Coast. Schools were identified based on list-serves online that showed universities with active LGBTQ+ organizations. Additionally, schools were identified through internet searches to see if they had an identifiable office of diversity and inclusion or department related to LGBTQ+ affairs with contact information. Once the identified schools were selected, I used two-stage sampling to divide the schools into urban, suburban, and rural universities (Lavrakas, 2008). To increase anticipated external reliability, I also identified schools that represented geographic diversity in respect to the student body, size, and specific location of the school (e.g. socioeconomic status, larger urban schools vs. suburban vs. smaller, rural schools, state schools vs. private schools).

In total, I contacted 65 schools to include in this study; however, I am unable to determine an exact number of participants who invited to the survey because the distribution of it was managed by the respective schools. Appendix B indicates the exact correspondence sent to the contacts at each institution, as it appeared in email form. For example, participants might forward emails to others who were not originally tallied in the initial target population. It is also feasible that contacts were not able to distribute the survey to eligible participants, thus complicating the calculation of the total amount of participants reached. For example, some

schools indicated that certain policies prevented them from circulating the recruitment while others never responded. Therefore, it is difficult to know exactly who was given access to the link, and thus, impossible to find the exact response rate. However, response rates are not always an accurate representation of survey quality and response-bias (Dillman et al., 2014).

I contacted representatives from the schools by email and phone (see sample correspondence in Appendix B). I also utilized social media contacts who were able to forward the information to relevant students or faculty members. Some schools were reached out to both over email and through social media. In total, 11 schools (17%) of schools were contacted via social internet profiles. Specifically, Facebook and Instagram advertisements were composed to attract any potential participants; relevant Facebook pages for LGBTQ+ centers and departments on campuses were also messaged to obtain permission to post the survey link. Given the difficulties in recruiting LGBTQ+ individuals, social media is an acceptable method in which to find participants who fit the criteria to participate in the study (Guillory et al., 2018).

Additionally, due to restrictions from the COVID-19 global pandemic, researchers have recommended conducting distant assessments when possible, either through phone or online (Padala et al., 2020; Townsend et al., 2020). Reasons for transferring to an online platform include reasons of safety and ease of recruiting participants given the pandemic and risk of exposure. Therefore, traditional face-to-face methods were not employed, but instead, all points of contact were either emailed, called, or messaged on social media websites. Most schools were operating under a virtual, remote-work semester which also would have made logistics for visiting difficult and not viable.

The survey in its entirety, including the data collection and informed consent, was given through Qualtrics. Upon building the survey, I prioritized pilot testing to ensure that the answers

were appropriately recorded. Feedback was also sought from other researchers to ensure the quality of the survey flow, design, and wording of instructions as well as individual scales. All contacts were given an email that included my background, purpose for the study, a clear explanation of the opportunity to win an incentive, an assurance of anonymity, and instructions for how to access the survey. Therefore, all procedures aligned Dillman et al.'s (2014) recommendations to include an introduction to the study, a link to participate, and information about IRB approval. Participants were also given a statement that their participation was completely voluntary; they could choose to end the study at any time. Participants were also reminded that not participating would automatically disqualify them from receiving a chance to win the incentive. Choosing two participants that received an incentive was achieved via Excel's ability to random number generator. The recruitment process resulted in a total of 253 participants that completed the study. Of this sample, 139 participants identified as LGBTQ+; however, we ended up having 135 usable responses from LGBTQ+ participants. The sample size fell short of the initial goals; I discuss the implications of the sample size later in the dissertation.

Data Screening

The data were input into Microsoft Excel and then transferred to SPSS (Version 27) for statistically analysis. I initiated the data screening process by manually performing validity checks for the collected responses. Specifically, I ensured that that data was free of unengaged responses, including answers that were Christmas-treed (e.g. 1,2,3,4 or 1,1,2,2,3,3) by visual examination of the responses. No issues relating to this manner of responding were found in the collected data. Checking for missing data allowed me to see the general percentage of data that was missing. Of the initial 283 responses that were recorded, there were 30 cases that were started and stopped in a cascading pattern where the participant stopped the survey for any

number of reasons, such as survey fatigue or boredom (Lavrakas, 2008). These 30 cases failed to respond to at least 15% of the items.

Given that the AMOS requires no missing data to properly run an SEM as well as preceding CFAs, the aforementioned missing values had to be appropriately addressed. Because large portion of data was missing combined with a very small number of individual missing cases, the aforementioned 30 cases were removed using listwise deletion. To substantiate the removal of these cases, I examined whether or not the missing data were missing completely at random (e.g. a person was filling out the survey and accidentally skipped an item based on human error) or if the data had a broader, underlying reason that it was missing (e.g. more than one participant may be uncomfortable answering certain items in the scales). Little's Missing Completely at Random Test (MCAR; Little, 1988) was used to examine missing values for the instruments with missing items. For the SCS-R, Little's test was significant ($\chi^2 = 65.944, p = 0.000$), thus indicating that the data was not missing at random. The most likely reason for this was the cascading effect that came from participant fatigue where they stopped responding after certain points in the survey.

After removing the 30 cases, I identified additional missing data and ran additional tests to evaluate the pattern. For the UCLA-R, Little's test was also significant ($\chi^2 = 38.564, p = 0.005$). I chose to do a mean imputation of 2.32 for the response to one of the items because it involved only a single item in the dataset. Additionally mean imputation is an easier method of imputing data that does not affect estimates of the mean. Moreover, mean imputation is appropriate for a single item; however, if additional items were missing, or we were sure that the items were highly correlated with other variables, a regression imputation may have been more appropriate (Fricker, 2012). Little's MCAR test was performed for the AUDIT and was found

not to be significant ($\chi^2 = 3.483, p = 0.942$), thus the value was missing completely at random. After a visual inspection of the AUDIT scores, I identified that item 8 included the missing cases. I determined that participants likely intended to put a '0' as a response for this item based on the working in the actual AUDIT scale, which registered as a missing item in Qualtrics. Thus, the value of 0 replaced the missing values in this case. After completing the data cleaning process, I tested for statistical assumptions as described below.

Statistical Assumptions

Statistical assumptions relating to normality were carried out through visual scanning of the histograms for each dependent variable. Additionally, outliers were appropriately handled through converting the scores to z-scores and determining if any scores meet the ± 3 threshold. Only three scores in the AUDIT met this threshold, and winsorizing method was performed in order to keep the validity of the participant's score while not skewing the rest of the data. Research has shown that winsorizing maintains the fidelity of the data and does not alter them in a meaningful manner (Bollinger & Chandra, 2005). Additionally, homogeneity of variances was tested for via Levene's Test. Homoscedasticity was also checked and found not to be a problem via scatterplots to determine whether or not the residuals were equally distributed, similar to homogeneity of variances required for Multivariate Analyses of Variances (MANOVAs). All dependent variables were non-significant with the exception of the AUDIT and the AUDIT-C. For Levene's Test for these scales, $F(1, 248) = 8.31, p = 0.004$ and $F(1, 248) = 5.81, p = 0.02$, respectively. Significance indicates that the homogeneity of variances assumption was violated, while non-significance indicates it was not. It is likely that this scale was impacted by users generally reporting lower levels of substance use than exist in the normal population. Additionally, multicollinearity was found to not be a problem for the regression, SEM, or

MANOVA analyses (Social Connectedness, Tolerance = .81, VIF= 1.24; Resilience, Tolerance = 0.81, VIF = 1.24). Shapiro's Wilk Test was found to be significant for all constructs except total SCS-R scores (BRS $W = .98, p = 0.002$; UCL, $W = .98, p = .000$; AUDIT, $W = .81, p = .000$; COVID, $W = .99, p = .013$; SCS, $W = .99, p = .071$). Significance for this statistical assumption indicated a deviation from normality, whereas non-significance did not. Despite significant results that can indicate a deviation from normality, visual examination of histograms, as well as skewness and kurtosis values overall indicate that the data can be considered normal.

Descriptive Statistics

Participant Characteristics

Participants' demographic information was captured using a researcher created demographics form. The respondents provided their age to ensure they met the criteria to participate in this study. The average age of all 253 participants, both LGBTQ+ and heterosexual-identifying, was 19.91 years ($SD = 1.44$), the median age was 20 years old, and the mode of the ages represented was 20 years old. Participants' reported gender consisted of 183 cisgender females (72.3%), 41 cisgender males (16.2%), 5 trans male or female (2.0%), and 22 genderqueer or genderfluid (8.7%). The respondents were also asked to report their racial/ethnicity group with which they identify. The ethnicity of the participants totaled at two American Indian or Alaskan Native (0.8%), 37 Asian (14.6%), 24 Black or African American (9.5%), three Native Hawaiian or Pacific Islander, (1.2%), 26 Hispanic/Latinx (10.3%) , and 188 Caucasian (74.3%). Participants were able to select more than one race or ethnicity, therefore the total amount adds up to over 100% of participants; however, that statistic does not take into account the question of how many participants out of the total ($N = 253$) selected a particular race/ethnicity identity.

Regarding their respective year in college, participants were asked to specify what year they currently are in for their undergraduate studies. Of the participants who answered ($N = 252$), 46 were freshman or in their 1st year (18.2%), 63 were sophomores or in their 2nd year (25.0%), 64 were juniors or in their 3rd year (25.3%), 71 were seniors and in their 4th year (28.1%) , six were in their 5th year (2.4%), and two chose ‘Option not specified’ (0.8%) . Participants were also asked the report the geographical region of their college to account for generalizability of the results to a variety of institutions. Overall, 56 participants reported being in an urban location (22.1%) , 175 reported being at a suburban location (69.2%), and 21 reported being at a rural location (8.3%). Additionally, participants were asked about their living situation in light of the COVID-19 pandemic that began in the same years that the data was being collected. Of the participants surveyed who responded ($N = 252$), 108 were living on campus (42.7%), 88 were living off-campus in apartment or related housing (34.8%), and 56 were living at home with family members (22.1%). Table 2 below shows the participant demographics for the total sample while Table 3 shows the demographic information for LGBTQ+ participants. Regarding the ages of LGBTQ+ participants, the average age was 19.87 and the standard deviation was 1.53.

Table 2

Demographic Characteristics of Total Participant Sample

| Variable | n | Percentage |
|----------------------------------|-----|------------|
| Gender | | |
| Cisgender female | 183 | 72.3 |
| Cisgender male | 41 | 16.2 |
| Trans male or female | 5 | 2.0 |
| Genderqueer or genderfluid | 22 | 8.7 |
| Did not respond | 2 | 0.8 |
| Race | | |
| Caucasian/White | 188 | 74.3 |
| Asian | 37 | 14.6 |
| Hispanic/Latinx | 26 | 10.3 |
| Black/African American | 24 | 9.5 |
| Native Hawaiian/Pacific Islander | 3 | 1.2 |
| American Indian/Alaskan Native | 2 | 0.8 |
| Year in College | | |
| Freshman/1 st year | 46 | 18.2 |
| Sophomore/2 nd year | 63 | 25.0 |
| Junior/3 rd year | 64 | 25.3 |
| Senior/4 th year | 71 | 28.1 |
| 5 th year | 6 | 2.4 |
| Option Not Specified | 2 | 0.8 |
| Did not respond | 1 | 0.4 |
| Geographical Location of College | | |
| Urban | 56 | 22.1 |
| Suburban | 175 | 69.2 |
| Rural | 21 | 8.3 |
| Did not respond | 1 | 0.4 |
| Living Situation during COVID-19 | | |
| On-campus | 108 | 42.7 |
| Off-campus | 88 | 34.8 |
| At-home with Family | 56 | 22.1 |
| Did not respond | 1 | 0.4 |

Table 3

Demographic Characteristics for LGBTQ+ identifying Participants

| Variable | n | Percentage |
|----------------------------------|-----|------------|
| Gender | | |
| Cisgender female | 92 | 68.1 |
| Cisgender male | 14 | 10.4 |
| Trans male or female | 5 | 3.7 |
| Genderqueer or genderfluid | 22 | 16.3 |
| Did not respond | 2 | 1.5 |
| Race | | |
| Caucasian/White | 105 | 77.8 |
| Asian | 17 | 12.6 |
| Hispanic/Latinx | 17 | 12.6 |
| Black/African American | 8 | 5.9 |
| Native Hawaiian/Pacific Islander | 0 | 0 |
| American Indian/Alaskan Native | 1 | 0.7 |
| Year in College | | |
| Freshman/1 st year | 30 | 22.2 |
| Sophomore/2 nd year | 35 | 25.9 |
| Junior/3 rd year | 31 | 23.0 |
| Senior/4 th year | 33 | 24.4 |
| 5 th year | 3 | 2.2 |
| Option Not Specified | 2 | 1.5 |
| Did not respond | 1 | 1.7 |
| Geographical Location of College | | |
| Urban | 32 | 23.7 |
| Suburban | 93 | 68.9 |
| Rural | 9 | 6.7 |
| Did not respond | 1 | 0.7 |
| Living Situation during COVID-19 | | |
| On-campus | 66 | 48.9 |
| Off-campus | 39 | 28.9 |
| At-home with Family | 29 | 21.5 |
| Did not respond | 1 | 0.7 |

Structural Equation Modeling

I applied SEM to test the research hypothesis associated with this study. Specifically, I tested whether or not loneliness or resilience mediated the relationship between social connectedness and drinking. The SEM process is initiated by creating a specific model to test. This model must be based on prior analysis of either data and a thorough literature review in order to create a theoretical model (Norman & Streiner, 2003; Weston & Gore, 2006). I reviewed the relevant literature to come up with a theory related to social connectedness of LGBTQ+ college students and the impact of connectedness on resilience, loneliness, and drinking. The model proposed is represented below in Figure 1. The testing of this model involved a two-step (Kline, 2011) process whereby I first examined the measurement models and then I tested the structural model.

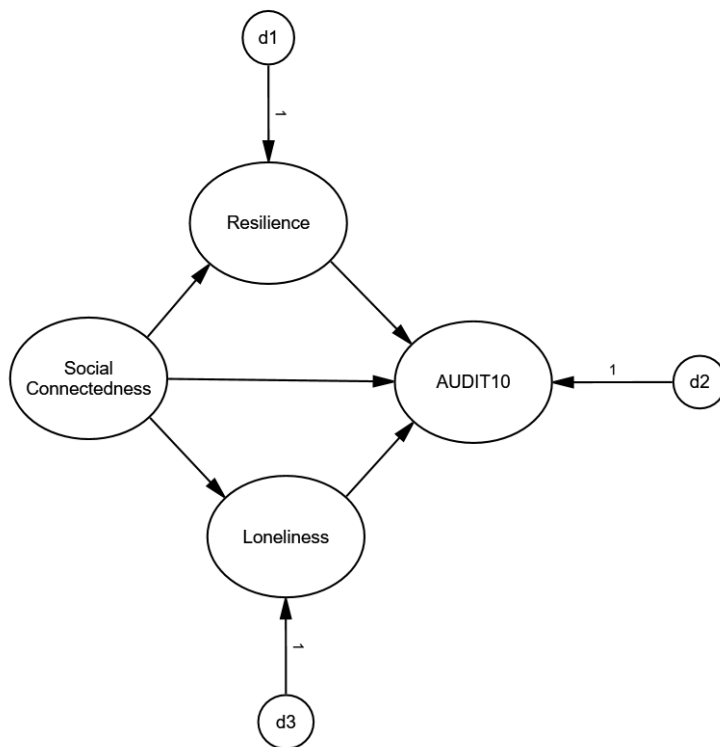


Figure 1. Hypothesized structural model

After the model has been specified, I examined the measurement models. Each model was examined using a Confirmatory Factor Analysis (CFA) that employed a maximum likelihood estimation technique in addition to other fit indices which will be described. The CFA was performed to assess for underlying factors and how certain items performed measuring a given construct (Byrne, 2010; Weston & Gore, 2006). The reliability of the measurements were also assessed using Cronbach's alpha for each of the four scales. Both evidence for reliability and underlying factor structure is essential to adequately perform a viable SEM. If the CFA came up with poor results, I covaried errors if appropriate or determined whether or not an exploratory factor analysis (EFA) was a logical next step. The following sections describe the measurement models.

Measurement Models

Social Connectedness Scale-R (SCR-R)

The SCS-R (Lee et al., 2001) was used to measure social connectedness of the participants. Specifically, this scale is used to measure social connectedness as a psychological sense of belonging and a cognitive understanding of the self in relation to others (Lee et al., 2001). The SCS-R is a self-report assessment consisting of 20 items that examine participants' sense of connectedness to others in their social environment. The original SCS scale was comprised of two subscales- (a) Social Connectedness and (b) Social Assurance (Lee & Robbins, 1995); however, the revised version only has one dimension. Additionally, the revised version included a new iteration of negative worded items that otherwise might confuse respondents. Overall, 10 positively worded items were added and 2 negatively worded items to increase the effectiveness of the scale in measuring the construct of social connectedness. Original items were also revised for mild deficiencies in conveying desired content (Lee et al., 2001). The scale

included 20 items, with such examples as ‘I feel disconnected from the world around me’ and ‘I have no sense of togetherness with my peers’. Responses to the scale include 1 (*Strongly Agree*), 2 (*Agree*), 3 (*Mildly Agree*), 4 (*Mildly Disagree*), 5 (*Disagree*), and 6 (*Strongly Disagree*). When the final tally of items is taken, a higher score indicates more social connectedness with others. Reverse scored items were appropriately altered to reflect accuracy in the total score of the participants.

Cronbach’s α was used to evaluate the internal consistency reliability of the 20 items in the SCS-R. Cronbach’s α for the entire scale was 0.97, which demonstrates evidence of very strong reliability of the scale (Cohen, 1988). Thus, the SCS-R appears to measure the construct of social connectedness as intended, at least with this population of participants. There were no subscales to assess for reliability within the SCS-R, therefore, Cronbach’s α for the total 20 items will suffice as the measurement of reliability for this scale.

Confirmatory Factor Analysis of SCS-R

In order to examine the SCS-R’s adequacy as a measurement tool, I conducted a CFA in AMOS. In this study based on prior research, the fit of the CFA is being measured by the Chi-Square (CMIN/DF < 3), CFI (>.9), RMSEA (<.8), SRMSR (<0.08), and TLI (<0.90). While RMSEA is sometimes considered acceptable with values under 0.10, 0.8 is a more universally-agreed upon threshold based on rigorous standards from previous research (Lewis, 2017; Weston & Gore, 2006). Further, given that Chi-square would be measured, because of sample size and degrees of freedom, avoiding significance is unlikely, the ratio of Chi-square to degrees of freedom is employed.

First, all factor loadings were in the acceptable range above .40 (Osborne et al., 2008). The initial CFA was not successful and indicated an inadequate fit. Specifically, the model had a

poor fitting: Chi-square ($\chi^2 = 401.41$, $df = 170$, $p < .001$, CMIN/DF = 2.36). The CFI was 0.84, which is below the acceptable fit of 0.90. The RMSEA was 0.10, which is not acceptable. Additionally, the SRMSR was 0.07, which did meet the threshold of 0.08; however, this fit index was the only one to indicate an acceptable fit outside of the CMIN/DF. Finally, the Tucker Lewis Index was 0.82, which was below the threshold. Based on the poor fit of the model, the modification indices were reviewed. Given that the analysis output noted errors, which covaried, I used theoretical rationale to explore the questions and justify whether or not it made sense to covary the errors. Based on the output, items 1 and 4 were covaried, item 7 was covaried with both item 9 and 5, and item 17 was covaried with item 18. Items 1 and 4 regarded feeling comfortable around new situations or people. Items 7 and 9 related to feeling a sense of belonging vs. being an outsider. Items 5 and 7 related to feeling a sense of closeness to others. And items 17 and 18 related to seeing oneself as a loner vs. related to people. Appendix D contains the individual items and thus, the theoretical underpinnings of each item. The resulting CFA was deemed an acceptable fit. The new model had a poor fitting initial Chi-square value, but a strong fitting CMIN/DF ($\chi^2 = 302.923$ $df = 166$, $p < .001$, CMIN/DF 1.83). The CFI was 0.90, which is deemed above the acceptable threshold of 0.90. The RMSEA was 0.08, which was acceptable at the threshold of 0.08. The SRMSR was 0.07, which was still below the threshold of 0.08, similar to the original model. Additionally, the TLI was 0.89, which while it is not technically above the threshold standards, is close to indicate that, along with the other fit indices, this model is an acceptable fit. Figures 2 and 3 respectively indicate the initial model and final model for the successful CFA.

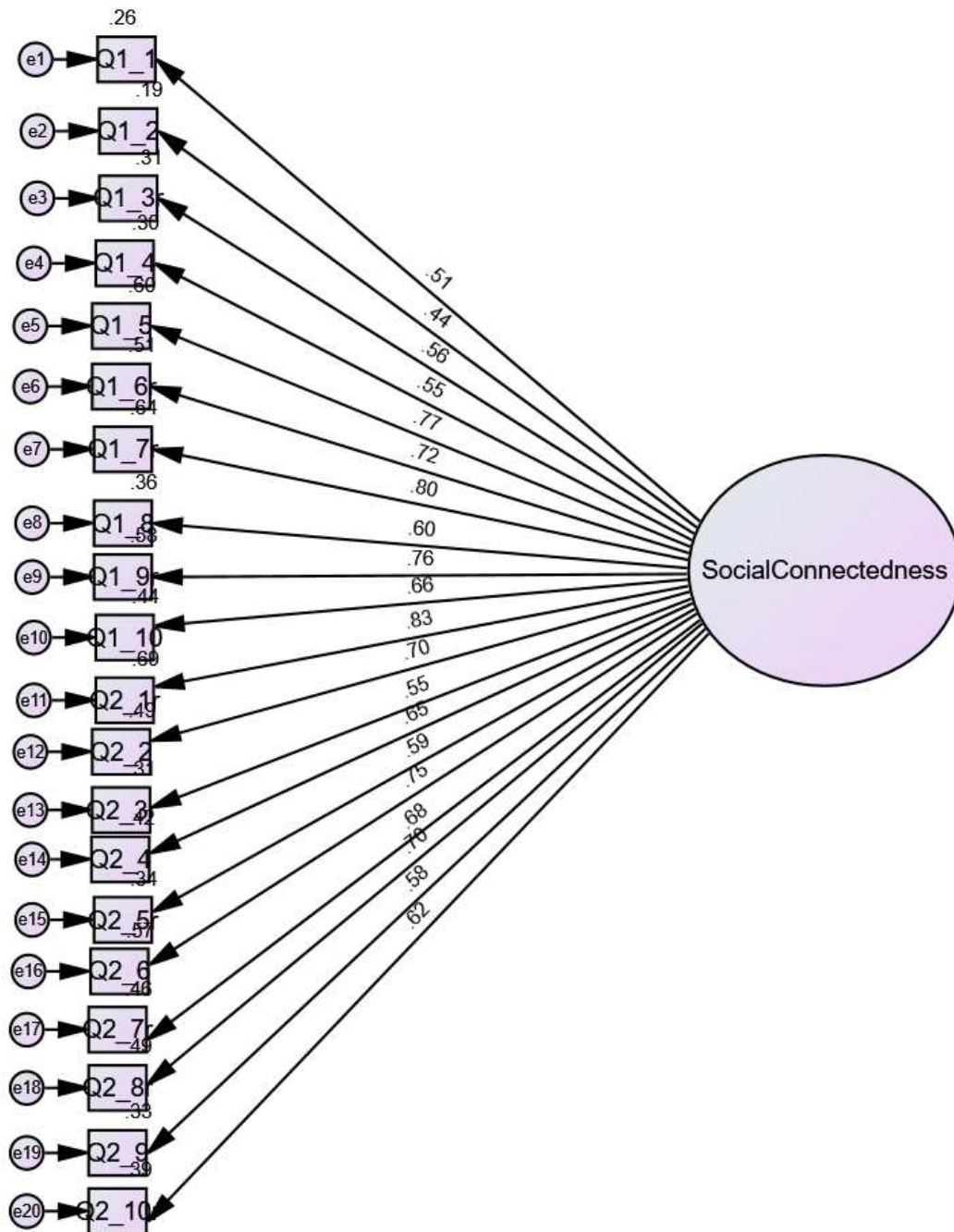


Figure 2. Initial CFA for SCS-R with standardized output

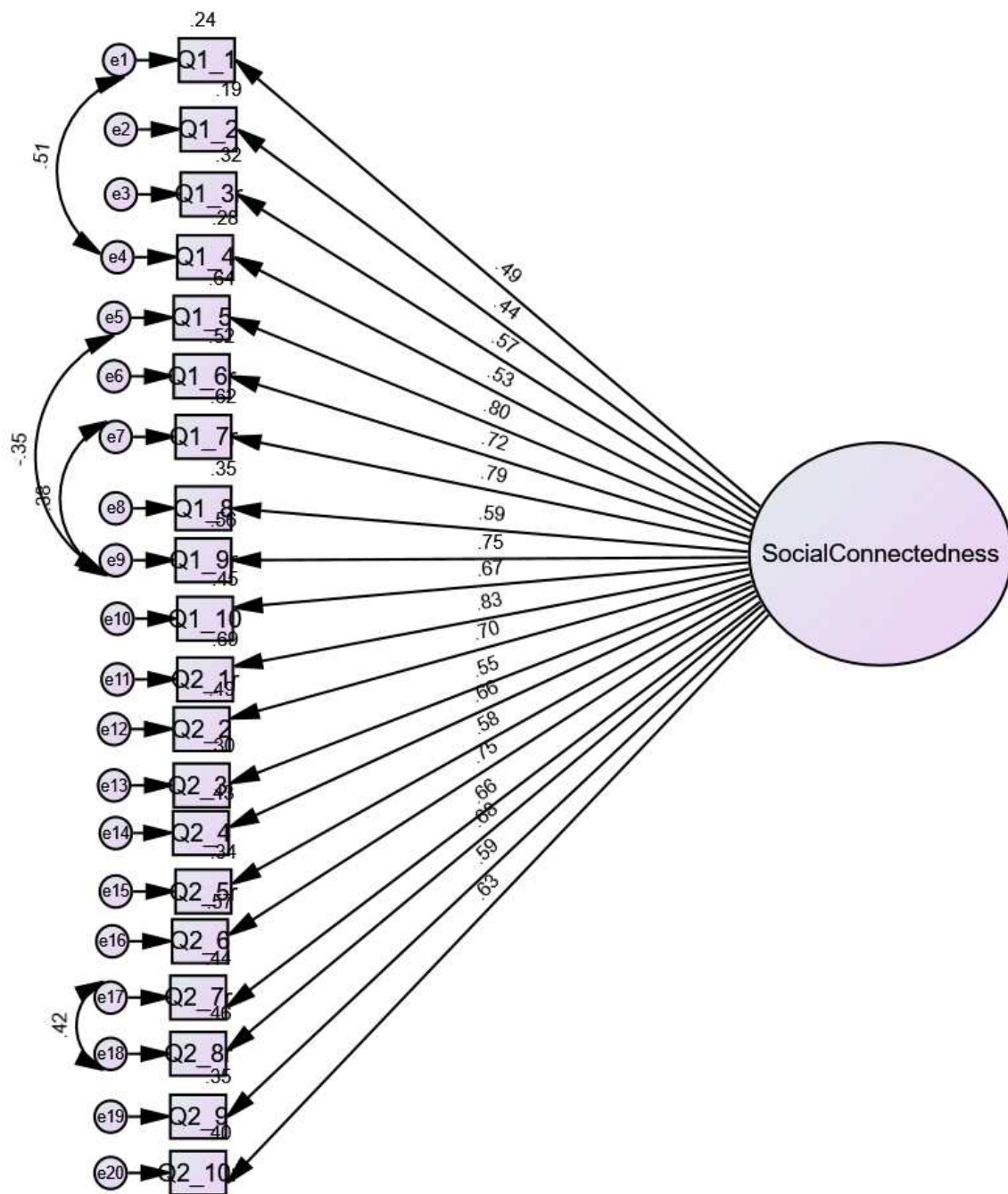


Figure 3. Final CFA for SCS-R with standardized output

Table 4

Fit Indicators for SCS-R

| | χ^2 | Df | CMIN/DF | CFI | TLI | RMSEA | SRMSR |
|-------------|----------|-----|---------|-----|-----|-------|-------|
| Model 1 | 401.41 | 170 | 2.36** | .84 | .85 | .10 | .07 |
| Final Model | 302.93 | 166 | 1.83** | .90 | .89 | .08 | .07 |

Note: ** = $p < .001$ CFI = Comparative Fit Index, TLI= Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean-Square Residual

UCLA Revised Scale (UCLA-R)

The UCLA-R is a unidimensional measure of loneliness that item topics including feeling understood by people and having others to turn to for support. The UCLA Loneliness Scale, revised version, (UCLA-R) was revised to account for bias in low vs. high-trending scores in the original scale which had all positively-worded items (Russell et al. 1980). The scale was edited to increase the evidence of discriminant validity of the original measure of loneliness vs. a measure of depression. Examples of items include “I feel in tune with the people around me”, “There is no one I can turn to”, and “No one really knows me well”. As noted earlier, the Likert-scale options for responses includes 1 (*Never*), 2 (*Rarely*), 3 (*Sometimes*), and 4 (*Often*) (Russell et al., 1980). Items that were reverse-coded were appropriately assessed and accounted for in SPSS to ensure fidelity of scoring.

The reliability of the UCLA-R was tested among the 20 items of the total scale. The internal consistency was found to be a Cronbach’s α of 0.91, which is indicative of very strong evidence of reliability of the scale (Cohen, 1988). There were no subscales as part of the unidimensional measure; therefore, the total scale Cronbach’s α will be used to assess for evidence of reliability of this scale. This Cronbach’s α provides evidence that the scale accurately measures the concept of loneliness for participants in this study.

Confirmatory Factor Analysis of UCLA-R

Similar to the initial CFA of the SCS-R, the initial CFA of the UCLA-R was not successful and indicated an inadequate fit. The factor loadings were all at an acceptable level of 0.40 or above (Osborne et al., 2008). The model had a poor fitting Chi-square, but when taking into consideration degrees of freedom, the model indicated a strong fit ($\chi^2 = 406.07$, $df = 170$, $p < .001$, CMIN/DF = 2.39). The CFI was 0.84, which was also below the acceptable value of 0.90. The RMSEA was 0.10, which is close but not quite meeting the standard of below 0.08 as necessitated in this study. The SRMSR was 0.07, which was below the value of 0.08. Finally, the TLI was 0.82, which is below the threshold of 0.90 required. Because only two indices indicate an acceptable fit, I looked at errors that were covarying within the initial model. Two items, 19 and 20, were highly correlated. Upon further reflection, both items related to connecting to others and thus the correlation was justified. Item 19 was 'There are people I can talk to' while item 20 was very similar: 'There are people I can turn to.' Appendix E contains the items that comprised the scale.

For the new model, the fit indices were still not at acceptable levels. The model did present with some acceptable fit indices ($\chi^2 = 352.75$, $df = 169$, $p < .001$, CMIN/DF = 2.09). The CFI was 0.87, the TLI was 0.86, and the RMSEA was 0.09. The SRMSR was 0.07. Items 1 and 6 were also showing to highly correlate- once again, this made sense as one item feeling in tune with others around them, while the latter referred to feeling close to those around them. These items, therefore, were justified in being correlated. For the third iteration, the fit indices were as follows: ($\chi^2 = 327.12$, $df = 168$, $p < .001$, CMIN/DF = 1.95) The CFI was 0.89, the TLI was 0.87 and the RMSEA was 0.08. The SRMSR was 0.06. Still, a few of the fit indices did not indicate

an acceptable CFA for this scale. The modification indices indicated that item 2 was very related to item 16. This also makes sense because each of them related to lacking companionship and those who understand them. Once these were covaried, a fourth iteration emerged.

For the fourth model, the same fit indices were not at acceptable levels. Regarding Chi square, the value indicated an acceptable fit regarding degrees of freedom ($\chi^2 = 302.17$, $df = 167$, $p < .001$ CMIN/DF=2.45). The CFI was 0.91, while the TLI was 0.89. The RMSEA was 0.08 and the SRMSR was 0.06. Four of the fit indices were now fitting, and thus the final model was deemed acceptable.

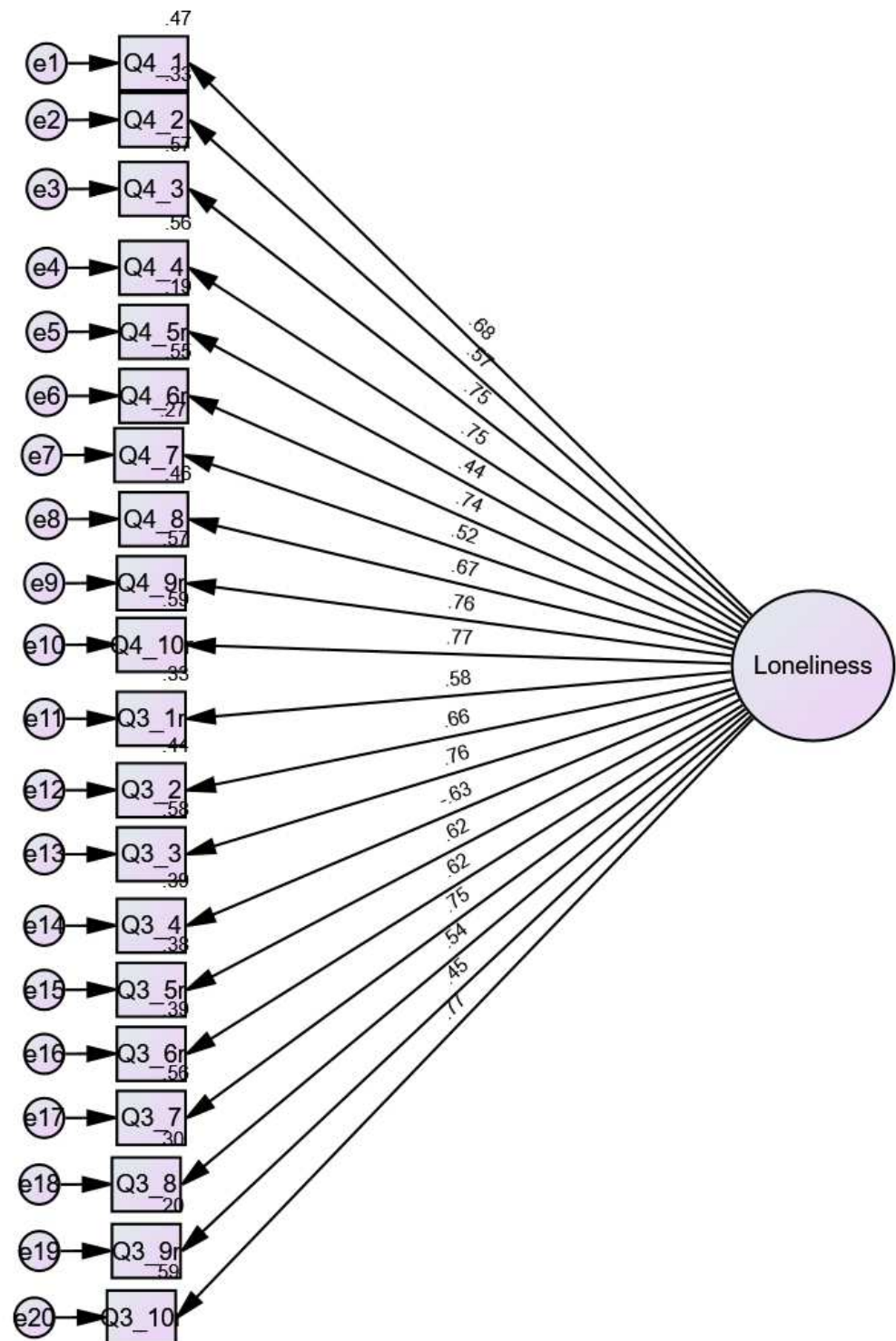


Figure 4. Initial CFA for UCLA-R with standardized output

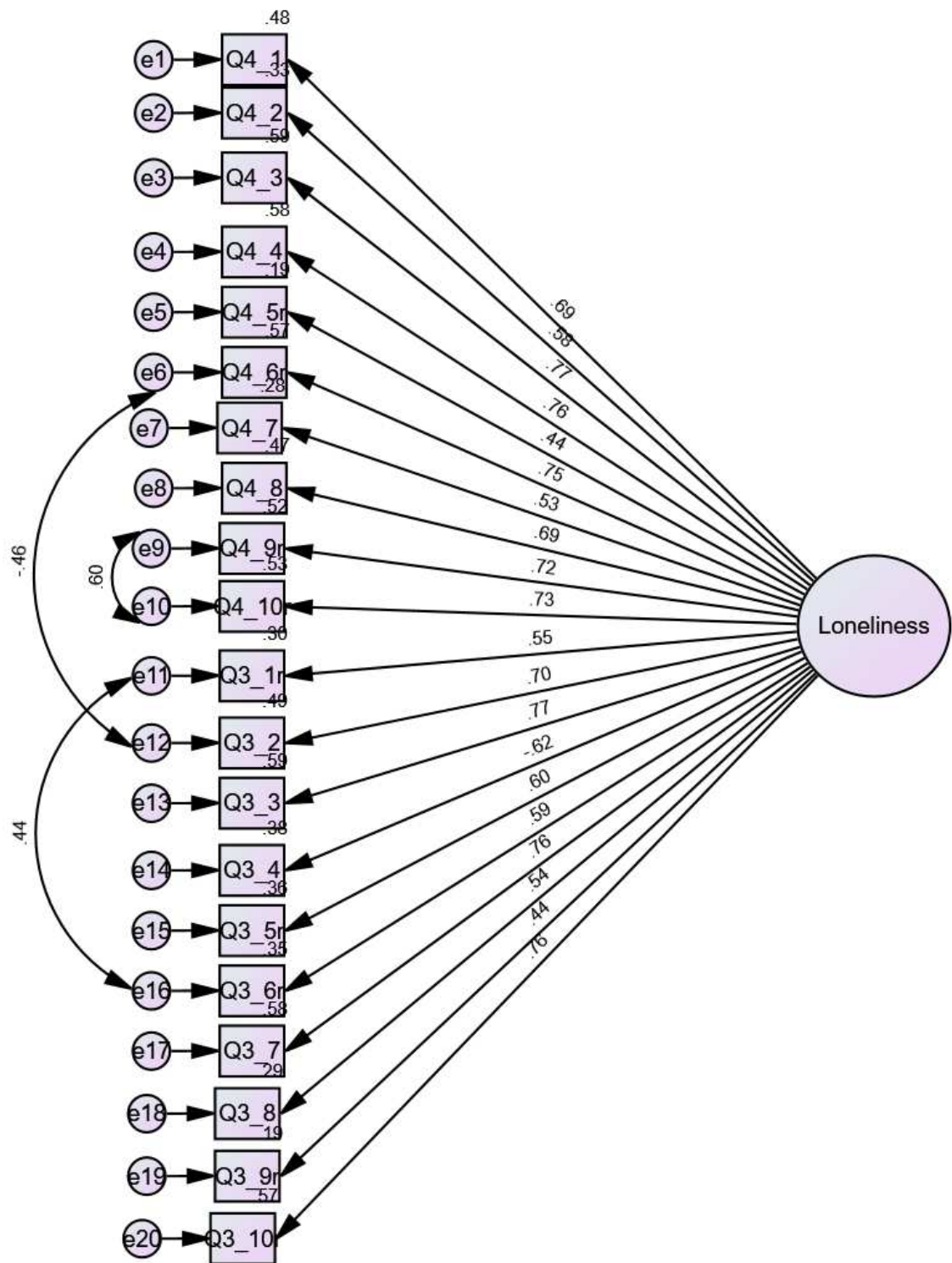


Figure 5. Final CFA for UCLA-R with standardized output

Table 5

Fit Indicators for UCLA-R

| | χ^2 | Df | CMIN/DF | CFI | TLI | RMSEA | SRMSR |
|-------------|----------|-----|---------|-----|-----|-------|-------|
| Model 1 | 406.07 | 170 | 2.39** | .84 | .82 | .10 | .07 |
| Final Model | 302.17 | 167 | 2.45** | .91 | .89 | .078 | .06 |

Note: ** = $p < .001$ CFI = Comparative Fit Index, TLI= Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean-Square Residual

The Brief Resilience Scale (BRS)

The BRS was designed as to measure resilience, which is defined as being able to bounce back from stressful events. This includes anything related to outcomes of events requiring resilience, and finally, being resilient to health outcomes (Smith et al., 2008). The scale was created with a small amount of items ($n = 6$ items) to assess the most basic meaning of resilience (i.e. “to bounce back from stress”) and to avoid the risk of obfuscating the main construct. The scale includes such items as “tend to bounce back quickly after hard times” and “I have a hard time making it through stressful events”. Three of the six total items that were reverse coded and assessed appropriately. The original scale was tested on four different samples including two sample populations of undergraduate students, for a total of 192 students (Smith et al., 2008). Thus, this increases the likelihood that this scale was appropriate for use with the population sampled. Items were scored on five different options, including 1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Neutral*), 4 (*Agree*), and 5 (*Strongly Agree*).

The reliability of the BRS was assessed by Cronbach’s α , measuring internal consistency. The total of the six items scored a Cronbach’s α of 0.92, which indicates very strong evidence of a high reliability of the scale (Cohen, 1988). The scale does not have subscales; rather, it is unidimensional and measures a specific definition of resilience. The internal consistency

provides evidence for the reliability of this measurement in evaluating the presence of resilient traits within the population sampled.

Confirmatory Factor Analysis for the BRS

A CFA was performed on the BRS to determine the adequacy of the measure in measuring the underlying factors. The analysis included the same fit indices and cutoffs as the previous two measurements. The factor loadings were all above the absolute value of .40 and were deemed acceptable (Osborne et al., 2008). The initial CFA showed that the Chi square value without respect to degrees of freedom was well fitting ($\chi^2 = 10.58$, $df = 9$, $p = .31$). The CMIN/DF indicated a strong fit of 1.18 ($p < 0.001$), which is well-below the value of 3.0 needed to be an adequate fit.

Regarding the other fit indices, the CFI was found to be 0.997, which is higher than both the 0.90 and 0.95 cutoffs, depending on the conservative nature of the research (Weston & Gore, 2006). The RMSEA was 0.04, which is below the 0.08 cutoff used in this study, and indicative of a strong fit. The SRMR was 0.02, which is well below the cutoff of 0.08. Finally, the TLI was 0.995, indicating that the resulting model performed much better than the null model. Regarding this particular model of the BRS, the scale appears to adequately measure the construct of resilience that it intended to measure. Because the initial CFA came back indicated a strong fit (e.g. all fit indices showed acceptable or strong values of a fitting model), there was no need to check modification indices for covarying errors. Additionally, the items are all highly related to a singular definition of resilience which likely accounts for the results of the CFA. Thus, the final and initial measurement model of the BRS are the exact same. The measurement model used for the BRS is presented below in Figure 6. Table 6 presents the results of the fit indices for the final CFA. Appendix F contains all item in the scale.

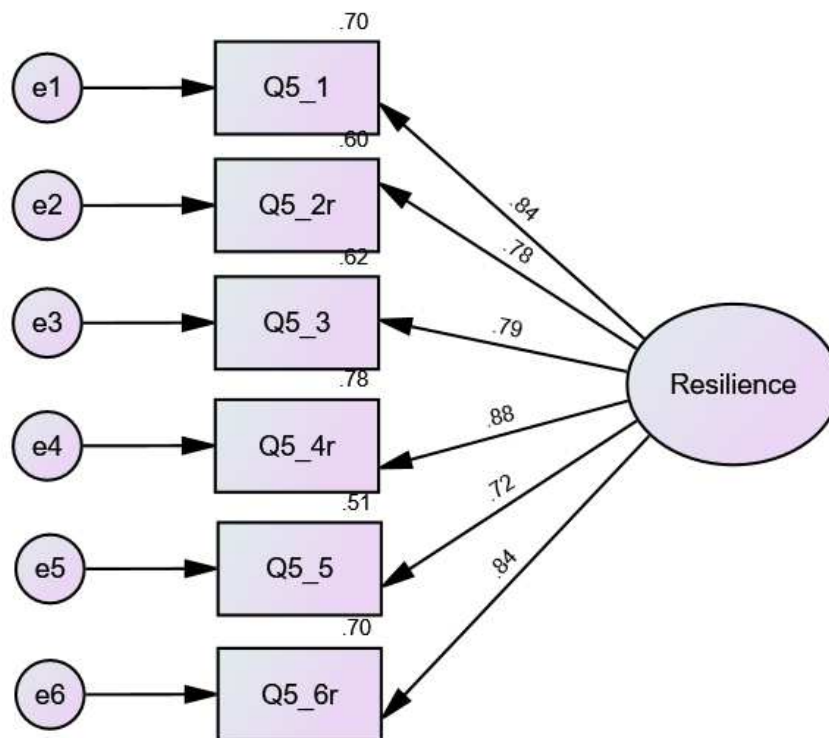


Figure 6. Initial and final CFA for BRS with standardized output.

Table 6
Fit Indicators for BRS

| | χ^2 | Df | CMIN/DF | CFI | TLI | RMSEA | SRMSR |
|-------------|----------|----|---------|------|------|-------|-------|
| Final Model | 10.58 | 9 | 1.18** | .997 | .995 | .04 | .02 |

Note: ** = $p < .001$ CFI = Comparative Fit Index, TLI= Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean-Square Residual

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT is a 10-item, self-administered survey with items related to alcohol-dependent behavior, the presence of hazardous drinking, and negative consequences from drinking. The measurement was developed by the World Health Organization (WHO; Saunders et al., 1993) as part of a larger collaboration to develop a screening instrument that measures hazardous alcohol consumption. The AUDIT contains particular domains: (a) alcohol intake, (b) potential dependence on alcohol, and (c) experience of alcohol-related harm. Responses to each question are scored from 0 to 4, with a higher total more indicative of hazardous drinking. The responses vary based on the questions being asked, and thus, the corresponding score for each question also varies.

The reliability of the AUDIT was assessed by the internal consistency of the particular domains as well as the total 10-item scale. The first domain, alcohol intake, has three items and had a Cronbach's α of 0.84, which is considered evidence of high reliability according to Cohen (1988). The second domain, potential dependence on alcohol, also contains three items and had a Cronbach's α of 0.70, which is considered marginally-acceptable reliability (Cohen, 1988). Finally, the third domain, experience of alcohol-related harm, which contained the final four items in the scale, had a Cronbach's α of 0.71, demonstrating evidence of acceptable reliability (Cohen, 1988). Overall, the scale was tested for internal consistency among all 10 items. The internal consistency of the AUDIT-10 total scale indicated a Cronbach α of 0.85, which is

considered a strong score of reliability (Cohen, 1988). Thus, the total scale would be more reliable as a measurement of hazardous drinking compared to the individual scales. However, it appears as though the AUDIT-C, which measures alcohol intake and is comprised of the first three items, as very similar in reliability as the total scale and thus, could also be used when answering the research questions.

Confirmatory Factor Analysis of the AUDIT

A CFA was performed on the AUDIT to determine appropriateness of the measurement in accurately assessing subscales and overall scores related to drinking behaviors. Factor loadings indicated that Item 16 was the only one that loaded below 0.4 (Osborne, 2008); however, research has allowed a cutoff of 0.20 (Child, 2006). Additionally, given the fewer amount of items on the AUDIT compared to other scales, it was important to evaluate whether to keep all items carefully in order to maintain reliability of the data. The analysis included the same fit indices and cutoffs as the previous measurements. The initial CFA conducted indicated that the initial Chi-square was not an adequate fit ($\chi^2 = 87.02$, $df = 32$, $p < 0.001$). However, when taking into consideration the Chi-square in terms of degrees of freedom, the model was an adequate fit ($CMIN/DF = 2.72$, $p < 0.001$). Regarding the other fit indices, the CFI indicated an adequate fit of 0.91, which is above the acceptable cut-off value of 0.90 and close to but not surpassing the more stringent value of 0.95 (Weston & Gore, 2006).

Upon examination of the RMSEA, the value was 0.11, which did not meet the threshold that was used in this study. Additionally, the TLI was 0.87. Regarding the SRMR, the value was 0.07, which was below the cut-off value of 0.08. Given that most fit indices indicated signs of a mostly adequate fit, I decided to check for covarying among error terms to see if there would be any changes in the RMSEA. Upon analysis of the modification indices, it was found that there

was a high level of covarying between 17 and error of the dependence factor. Additionally, items 11 and 13 highly covaried. Upon further reflection, item 17 related highly to dependence as it asked if a professional had ever asked the participant to cut down on drinking. Items 11 and 13 were related to not being able to function normally or complete activities because of drinking.

Appendix INSERT HERE below provides the list of items in the AUDIT as seen by the participants. Further examining the two items, they were theoretically related and therefore, it was justifiable to covary the two items to examine a modified CFA.

The modified CFA indicated that the resulting model was a better fit While the Chi-square value without incorporating degrees of freedom was adequate, ($\chi^2 = 41.11$, $df = 30$, $p = .09$), the CMIN/DF was adequate (CMIN/DF= 1.37, $p = .09$). Additionally, the CFI was at a value of 0.98, which indicated a strong fit according to both index thresholds used. The RMSEA was 0.05, which was below the threshold needed of 0.08. The SRMR was 0.05, which also indicated an adequate to strong fit. The TLI was raised to 0.97, also indicative of an acceptable to strong fit. Given that the final CFA showed fit indices that were acceptable or indicated of a strong fit, this modified measurement model of the AUDIT was used. The initial and final measurement models for the AUDIT are seen in Figures 7 and 8 respectively, below. Table 7 contains the fit indices for the final CFA of the AUDIT.

Table 7
Fit Indicators for AUDIT

| | χ^2 | Df | CMIN/DF | CFI | TLI | RMSEA | SRMSR |
|-------------|----------|----|---------|-----|-----|-------|-------|
| Model 1 | 87.02 | 32 | 2.72** | .91 | .92 | .11 | .07 |
| Final Model | 41.11 | 30 | 1.37** | .98 | .97 | .05 | .05 |

Note: ** = $p < .001$ CFI = Comparative Fit Index, TLI= Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean-Square Residual

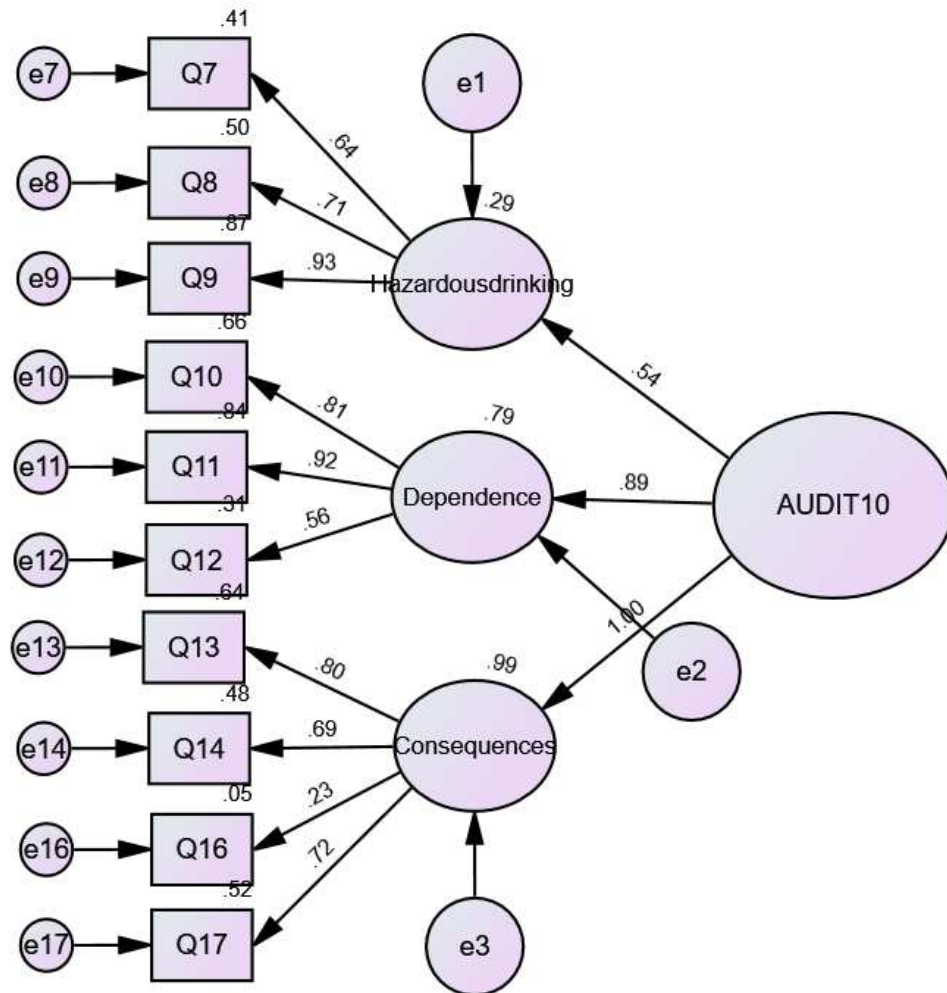


Figure 7. Initial CFA of the AUDIT with standardized output

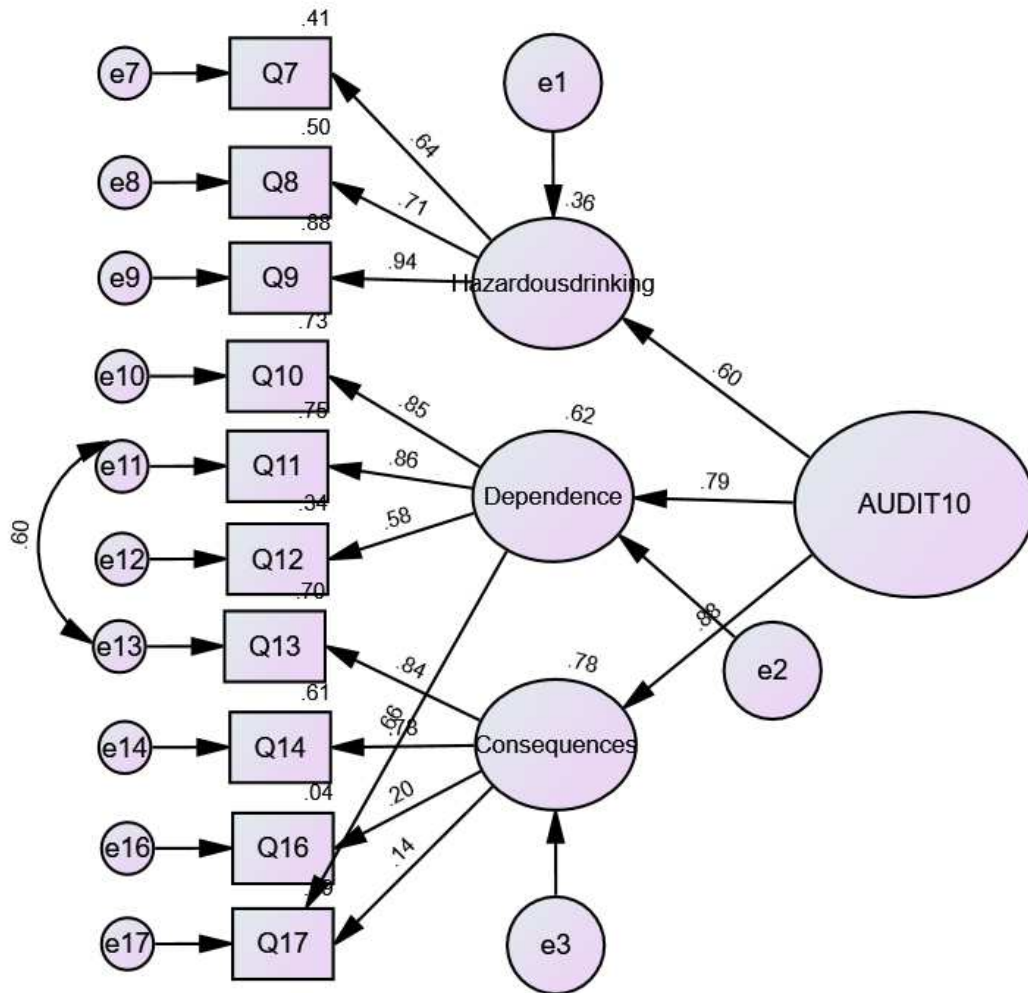


Figure 8. Final CFA for AUDIT with standardized output

Structural Model

The structural model is based on relevant literature and researcher hypotheses using the accepted measurement models for each scale. The original hypothesis included Social Connectedness, Resilience, Loneliness, and the AUDIT scores as latent variables. Social Connectedness was a latent endogenous variable, while Resilience, Loneliness, and the AUDIT were latent endogenous variables. The only subscales that existed were on the AUDIT, including Hazardous Drinking (Items 7, 8, and 9), Dependence (Items 10, 11, and 12), and Consequences of Drinking (Items 13, 14, 16, and 17). The original hypothesis was that social connectedness would negatively correlate with drinking, and that resilience explained the relationship whereby social connectedness was positively predictive with resilience, and resilience was negatively predictive of hazardous drinking. Additionally, it was predicted that social connectedness would negatively correlate with loneliness, which would in turn increase drinking, and thus scores on the AUDIT.

The first model, Model 1, followed the initial hypothesized structural model fully. Because there were no adjustments outside of errors covarying, all items and subscale indicators were measured as recommended by their respective creators. I ensured that AMOS was only measuring the LGBTQ+ participants as the other participants would conflate or alter the data and would not answer the original research questions. Given the fit indices used to conduct the CFAs, the CMIN/DF (< 3), CFI (> 0.90), TLI (≥ 0.90), SRMSR (< 0.08), and RMSEA (< 0.08), the same indices were used to verify whether the SEM supported the original hypothesis.

This model had a significant Chi-square ($\chi^2 = 2446.54$, $df = 1467$, $p < 0.001$), while the CMIN/DF value (1.67) was in the good fit range. However, the CFI was 0.80, thus it was well below the cutoff value of 0.90 recommended for an acceptable fit. The TLI value of 0.79, was

similar, and also below the cutoff of 0.90 required. The RMSEA, on the other hand, provided an acceptable fit of 0.07, which is below the acceptable fit threshold of 0.08 for that index. The SRMSR, at 0.09, was not below the acceptable value of 0.8. In all, only two three of the five indices demonstrated that the proposed model was either a good or acceptable fit.

Results of Structural Equation Model

The model had a few significant findings. First, social connectedness predicted resilience (standardized coefficient = 0.439, $p < 0.001$). However, resilience did not significantly predict scores on the AUDIT-10 (standardized coefficient = -0.062, $p = .596$). Social connectedness predicted loneliness (standardized estimate = -0.908, $p < 0.001$); however, social connectedness did not significantly predict scores on the AUDIT-10 (standardized estimate = 0.15, $p = .63$). Yet, loneliness did not significantly predict scores on the AUDIT-10 (standardized estimate = 0.21, $p = 0.49$). Thus, we failed to reject the null hypothesis that social connectedness is connected to drinking through a mediation via connectedness as well as loneliness. Specifically, while higher scores of social connectedness predicted higher scores of resilience and lower scores of loneliness, neither resilience nor loneliness, significantly predicted drinking.

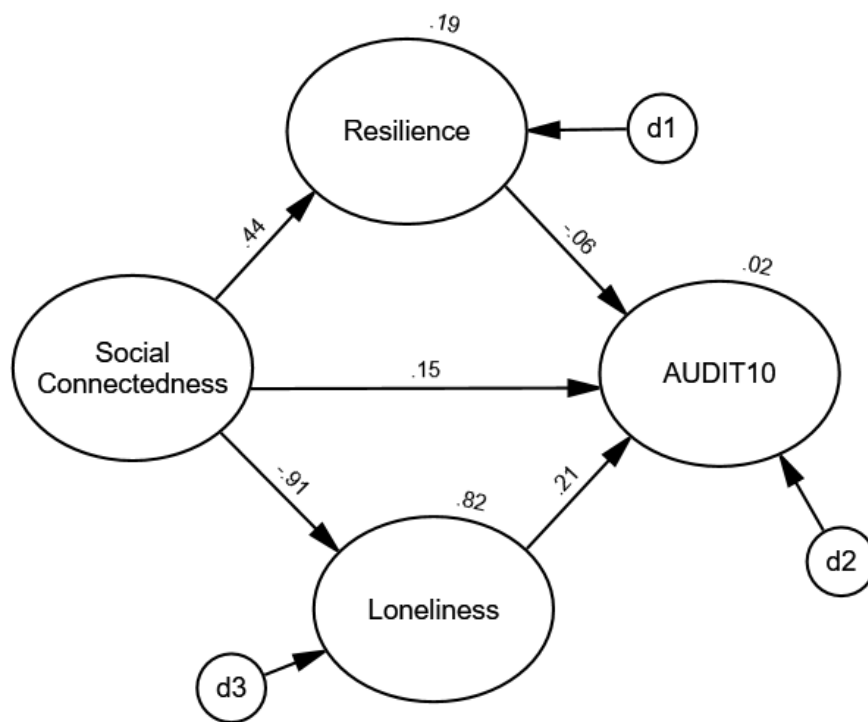


Figure 9. Initial Structural Equation Model for research hypothesis

Model Re-specification

Given that the initial model failed to perform adequately, a revision was made where, instead of the AUDIT-10, the three items comprising the AUDIT-C (Items 7, 8, and 9) were used. The AUDIT-C has demonstrated evidence and reliability when used with a college population of participants (DeMartini & Carey, 2012). Additionally, the factor loadings were high for the AUDIT-C and represented adequately that the items related to the factor of hazardous drinking. When the model was re-specified, the results were as follows: This model had a significant Chi-square ($\chi^2 = 1880.69$, $df = 1115$, $p < 0.001$), The CMIN/DF was 1.69, which is below the threshold of 3 used for this study. The CFI was 0.82, and the TLI was 0.81, indicating that while they did not meet the minimum threshold of 0.90, the results indicated the modified model was a slightly more acceptable fit than the initial model. The RMSEA was acceptable (0.07) and below the threshold of 0.08 required. The SRMSR was 0.08, and was at the threshold of 0.08 required for this study. Because three of the five indices indicated an adequate to good fit, it can be noted that the resulting model was still questionable, though arguably marginally acceptable.

Results of Modified Structural Equation Model

The model had a few significant findings. First, social connectedness predicted resilience (standardized coefficient = 0.44, $p < 0.001$). However, resilience did not significantly predict hazardous drinking (standardized coefficient = .08, $p = .44$), although it appears as though it was more near significance than the original model. Social connectedness predicted loneliness (standardized estimate = -.91, $p < 0.001$). Yet, loneliness did not significantly predict scores on AUDIT-C (standardized estimate = 0.450, $p = 0.08$); however, the results were closer to

significance than the previous model. Additionally, social connectedness predicted hazardous drinking via the AUDIT-C (standardized coefficient= 0.64, $p = 0.04$); however, it was in the opposite direction as predicted. Thus, we failed to reject the null hypothesis that social connectedness is not connected to drinking through a mediation via resilience as well as loneliness. Specifically, while higher scores of social connectedness predicted higher scores of resilience and lower scores of loneliness, only social connectedness predicted hazardous drinking.

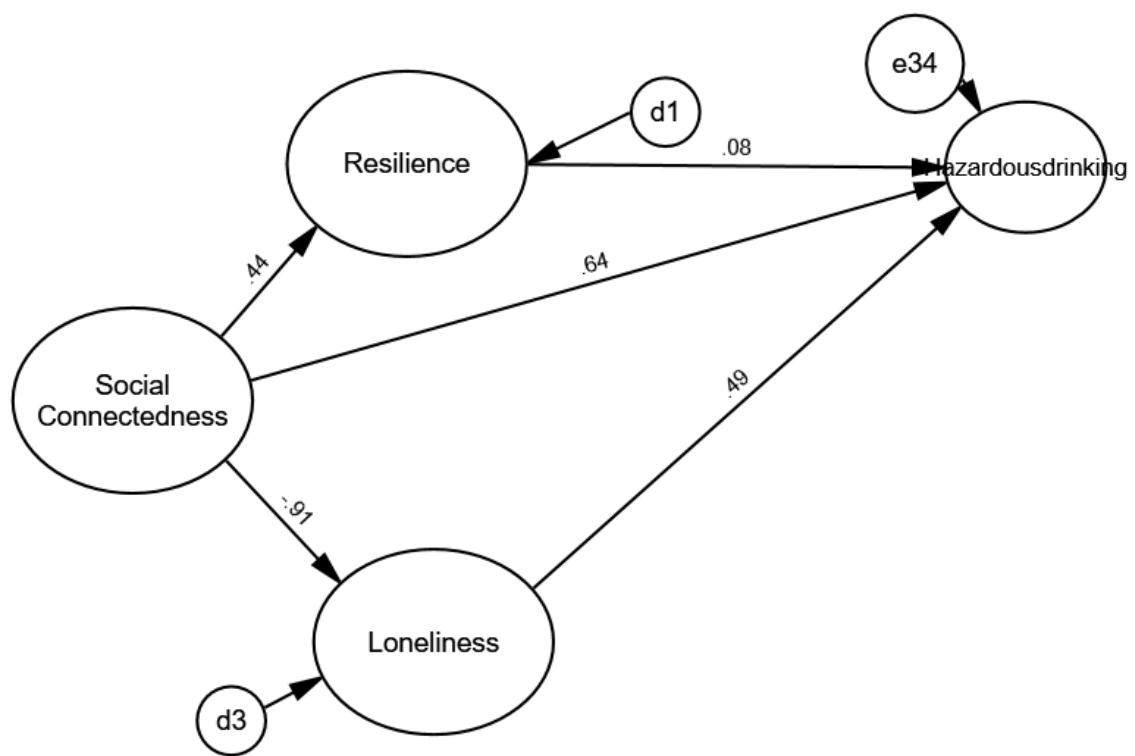


Figure 10. Re-specified Structural Model of research hypothesis

Post-Hoc Multiple Linear Regression Analyses

As noted earlier in the project, the sampling process employed did not return a large enough sample to achieve based on a priori power analysis. Thus, there is an increased likelihood of Type I error or a situation where we failed to reject null hypothesis when it is in fact false. Consequently, in order to examine whether or not resilience and loneliness were mediating variables that explained the relationship between social connectedness and drinking, I conducted two multiple linear regressions (Tabachnick & Fidell, 2018). As noted in Tables 8 and 9, I first conducted a simple linear regression with social connectedness as the independent variable and resilience as the dependent variable.

For the first regression, social connectedness explained 16.9% of the variance in resilience, $F(1, 133) = 27.117, p < 0.001$. Additionally, I conducted another linear regression with social connectedness as the independent variable and drinking as the dependent variable. For this regression, social connectedness explained only 0.006% of the variance in drinking scores on the AUDIT, $F(1, 133) = 0.820, p = 0.367$. Therefore, social connectedness was not a statistically significant predictor of drinking within the LGBTQ+ population sampled. Further, when considering the mediating role of resilience, the combination of social connectedness with resilience was not significantly predictive of AUDIT scores, $F(2, 132) = 0.408, p = 0.666$. In other words, the predictive value of social connectedness ($\beta = 0.078, p = 0.367$) was not significantly reduced by resilience, indicating that resilience did not mediate relationship between social connectedness and resilience.

For the second question regarding the mediating role of loneliness in explaining the relationship between social connectedness and drinking, a multiple linear regression was performed. For the first equation regarding the relationship between social connectedness and

loneliness, social connectedness was found to be a significant predictor of loneliness, $F(1, 133)=355.286, p<0.001$). Loneliness did not mediate the relationship between social connectedness and drinking, $F(2, 132)=0.997, p=0.372$). Therefore, similar to above, the predictive value of social connectedness ($\beta = 0.078, p=0.367$) on drinking was not significantly explained by loneliness.

Table 8. Mediation Analysis

| Independent Variables | Dependent Variable | <i>SE</i> | β | <i>F</i> |
|-----------------------|--------------------|-----------|---------|----------|
| Step 1 | | | | |
| Social Connectedness | Resilience | 0.27 | 0.412* | 27.117* |
| Step 2 | | | | |
| Social Connectedness | Drinking | 0.019 | 0.078 | 0.820 |
| Step 3 | | | | |
| Social Connectedness | Drinking | 0.021 | 0.080 | 0.408 |
| Resilience | | 0.061 | -.004 | |

Note. N= 135.

* $p<0.001$.

Table 9. Mediation Analysis

| Independent Variables | Dependent Variable | <i>SE</i> | β | <i>F</i> |
|-----------------------|--------------------|-----------|----------|----------|
| Step 1 | | | | |
| Social Connectedness | Loneliness | 0.27 | -0.853*. | 355.286* |
| Step 2 | | | | |
| Social Connectedness | Drinking | 0.019 | 0.078 | 0.820 |
| Step 3 | | | | |
| Social Connectedness | Drinking | 0.036 | 0.231 | 0.997 |
| Loneliness | | 0.058 | 0.179 | |

Note. N= 135.

* $p<0.001$.

Differences in Scores Between Participants

A Multivariate Analysis of Variance (MANOVA) was used to compare the differences between social connectedness, resilience, loneliness, drinking, and COVID-related anxiety based on participants who identified as heterosexual and LGBTQ+ participants. The results demonstrated that there was a statistically significant difference between LGBTQ+ and heterosexual participants regarding their overall combined scores of social connectedness, resilience, loneliness, drinking and COVID-related anxiety, $F(10, 243) = 2.878, p = 0.01$; Wilk's $\lambda = 0.934, \eta_p^2 = 0.066$, with a medium effect size. To determine specifically which variables significantly differed between the two groups of participants, follow up ANOVAs were performed. Of the univariate tests, social connectedness was significantly different, $F(1, 248) = 11.597, p = 0.001, \eta_p^2 = 0.045$, a small effect size accounting for 4.5% of the variance in the outcomes. Loneliness was also significantly different between groups, $F(1, 248) = 10.986, p = 0.001, \eta_p^2 = 0.042$; thus loneliness accounted for 4.2% of the variance of the total outcome, and had a small effect size. Both the AUDIT and the AUDITC (First three questions of the AUDIT) were significantly different, $F(1, 248) = 6.409, p = 0.012, \eta_p^2 = 0.025$, and $F(1, 248) = 6.188, p = 0.014, \eta_p^2 = 0.024$, respectively. Thus, the AUDIT accounted for 2.5% of the total variance among the measures, meaning it had a small effect size, while the AUDIT-C accounted for 2.4% of the total variance, also having a small effect size. Resilience was not significantly different when comparing participants who identified as LGBTQ+ and heterosexual, $F(1, 248) = 2.586, p = 0.109, \eta_p^2 = 0.01$, where resilience accounted for 1.0% of the outcome variance. Table 10 gives a complete display of the results from the MANOVA.

Post-hoc tests such as Tukey's tests were not necessary given that there were only two groups being compared – LGBTQ+ vs. non-LGBTQ+. Social connectedness was higher in heterosexual participants ($M= 85.467$, $SD= 15.50$) compared to LGBTQ+ participants ($M= 78.53$, $SD=16.61$). Additionally, resilience, while not statistically different within this sample, was higher among heterosexual participants ($M= 18.66$, $SD= 5.61$) than LGBTQ+ participants ($M=17.52$, $SD= 5.64$). Loneliness was higher among LGBTQ+ participants ($M= 44.08$, $SD= 10.29$) compared to heterosexual participants ($M= 40.00$, $SD= 8.97$). COVID related anxiety, while not significantly different between the two groups, was slightly higher in LGBTQ+ participants ($M= 15.41$, $SD= 4.47$) than among heterosexual participants ($M= 14.92$, $SD= 4.62$). Regarding the ADUIT, scores were higher among heterosexual participants ($M= 14.14$, $SD= 4.83$) compared to LGBTQ+ participants ($M= 12.78$, $SD= 3.60$). This trend held for the AUDIT-C, where participants who identified as heterosexual ($M= 5.71$, $SD= 2.72$) scored higher than LGBTQ+ participants ($M= 4.95$, $SD= 2.13$). Table 9 displays the complete results from the differences in scores between the constructs.

Table 10
Multivariate Analysis of Variance (MANOVA) Results

| Constructs | <i>F</i> Value | <i>Df</i> | <i>p</i> Value | η_p^2 |
|-------------------------|----------------|-----------|----------------|------------|
| Overall Model | 2.88 | 10, 243 | .01 | .07 |
| Univariate Tests | | | | |
| Social connectedness | 11.60 | 1, 248 | .00 | .05 |
| Loneliness | 10.99 | 1, 248 | .00 | .04 |
| Resilience | 2.59 | 1, 248 | .11 | .01 |
| AUDIT | 6.41 | 1, 248 | .01 | .03 |
| AUDIT-C | 6.19 | 1, 248 | .01 | .01 |
| COVID-Anxiety | .712 | 1, 248 | .40 | .00 |

Note: Values = Rounded to nearest hundredth (.xx)

Table 11

Mean Scores Between Participants by Sexual Orientation

| | LGBTQ+ | <i>SD</i> | Heterosexual | <i>SD</i> |
|----------------------|--------|-----------|--------------|-----------|
| Social Connectedness | 78.53 | 16.61 | 85.45 | 15.50 |
| Loneliness | 44.08 | 10.29 | 40.00 | 8.97 |
| Resilience | 17.52 | 5.64 | 18.66 | 5.61 |
| AUDIT | 12.78 | 3.60 | 14.14 | 4.83 |
| AUDIT-C | 4.95 | 2.13 | 5.71 | 2.72 |
| COVID-Anxiety | 15.41 | 4.47 | 14.92 | 4.62 |

Note: Values = Rounded to nearest hundredth (.xx)

Correlation of Constructs

I sought to determine whether or not social connectedness was significantly related to drinking. Given that skewness and kurtosis are indicators of normality of the data, Byrne's (2010) and Bentler's (2006) rules of thumb were used to determine if the data had any significant levels of either indicator (e.g. any value greater than ± 3 for skewness and ± 5 for kurtosis statistic is considered significantly skewed or kurtotic). The AUDIT was the only scale that had a higher kurtotic value than others; however, it was still under the value of 5 threshold. Thus, a Pearson correlation was conducted to determine significance of correlation between the variables.

The Pearson correlations demonstrated that there was a significant, positive correlation between social connectedness and resilience for LGBTQ+ participants ($r = .41$, $p < .001$, 17% of the variance explained). The r indicated that it was a medium, positive correlation. Regarding the

correlation between social connectedness and loneliness, there was a strong, inverse significant relationship, ($r = -.85, p < .001$, 72% of the variance explained). Social connectedness was not significantly related to COVID-related anxiety. While social connectedness was not correlated with the AUDIT ($r = .08, p = .37$, 0.6% of the variance explained), it was significantly, positively correlated with the AUDIT-C ($r = .24, p < .05$, 5.8% of the variance explained). Resilience was significantly and negatively correlated with loneliness for LGBTQ+ participants ($r = -.37, p < 0.001$, 13.7% of the variance explained). Resilience was also inversely and significantly correlated with COVID-related anxiety ($r = -.23, p < .05$, 5.3% of the variance explained). Resilience was not significantly correlated with either the AUDIT or AUDIT-C. The AUDIT was significantly correlated with the AUDIT-C ($r = 0.84, p < .001$, 70.6% of the variance explained). Table 12 provides a comprehensive list of the correlations found between the constructs as well as general significance levels of each correlation.

Table 12. Means, Standard Deviations, and Correlations Among Social Connectedness, Resilience, Loneliness, Drinking, and COVID-related Anxiety.

| Variables | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 | 5 | 6 |
|-------------------------|----------|-----------|--------|-------|------|------|------|-----|
| 1. Social Connectedness | 78.47 | 16.49 | --- | | | | | |
| 2. Resilience | 17.53 | 5.60 | .41** | --- | | | | |
| 3. Loneliness | 44.08 | 10.19 | -.85** | -.37* | --- | | | |
| 4. COVID-Anxiety | 15.50 | 4.54 | -.14 | -.23* | .15 | --- | | |
| 5. AUDIT | 12.71 | 3.59 | .08 | .03 | -.02 | -.07 | --- | |
| 6. AUDITC | 4.90 | 2.13 | .24* | .16 | -.14 | -.06 | .84* | --- |

* $p < .05$. ** $p < .001$

Summary

In this chapter, I conducted the primary analyses. However, I first described the process by which I cleaned and organized the data, tested for statistical assumptions, and described the breakdown of the demographic information. Before conducting the analyses, the two-step process of SEM was followed, including testing the measurement models of the scales used while modifying them as necessary before conducting the analysis on the complete structural model. Then, following the primary and exploratory research hypothesis: (a) the primary SEM model was specified and tested to evaluate the hypothesized, (b) the model was re-specified and the hypothesis was re-evaluated, (b) I ran the regressions to bolster statistical power for the structural models; (c) MANOVAs were conducted to compare average scores and standard deviations of each construct between heterosexual vs. LGBTQ+ participants, and (d) I conducted the correlations between the constructs. Following this chapter, a discussion, implications, and future directions of the results will be discussed in Chapter 5.

CHAPTER FIVE- DISCUSSION

This study was conducted to understand the relationships between minority-stress related constructs significantly impacting the LGBTQ+ community, as well as the same constructs affecting college students broadly. In addition to blatant acts of hostility and discrimination (AAU, 2015), LGBTQ+ students in the college setting do not always have effective programmatic efforts in place to meet their needs, despite recommendations from researchers that these efforts can alleviate the impact of discrimination (Kulick et al., 2017) while helping them feel more included on college campuses. The intrapersonal and interpersonal realities of being a stigmatized group significantly and negatively impact the lives of LGBTQ+ students in college settings, as they are surrounded by social expectations within a broader campus culture that is heteronormative and not-welcoming to their identity (Dworkin et al., 2018; Hatzenbuehler et al., 2011). Instances of minority stress include instances of outright discrimination as well as subtler forms of non-inclusivity with campus culture or microaggressions feeling rejected by fellow students, faculty, and staff. This can lead to feelings of loneliness, rejection, and turning to unhealthy coping mechanisms for LGBTQ+ students.

Due to the significant impacts of minority stress on LGBTQ+ college students' sense of connectedness to other (Meyer, 2015; Longerbeam et al., 2007; Pachankis et al., 2014; Woodford & Kulick, 2015), there is an increasing need to understand how LGBTQ+ students cultivate resilience (Livingston et al., 2016), and consequently, how that resilience is related to substance use (Lachowsky et al., 2017). Moreover, social connections, according to literature, can increase resilience among LGBTQ+ students but can also contribute to loneliness in LGBTQ+ students if these connections primarily result from engaging in substance use or lack a sense of supportiveness (Longerbeam et al., 2007; Morse et al., 2019).

Social connectedness has been found to increase resilience in overcoming problems and provide a source of social support during difficult times, thus acting as a buffer between minority stress and negative mental health outcomes for LGBTQ+ students (DiFulvio, 2011; Mason et al., 2014a). A lack of connection and feelings of apprehension and rejection from those around them have also been found to be predictive of hazardous substance use as a means of coping for LGBTQ+ students (Pachankis et al., 2014). Moreover, social connections via involvement with campus groups allow LGBTQ+ students to succeed in college despite the presence of systemic social and political barriers (Mancini, 2012). This increased ability to demonstrate resilience, in turn, protects LGBTQ+ students from resorting to drinking as a way of dealing with minority stressors (Lira & Morais, 2018; Schmitz & Tyler, 2018; Woodford et al., 2015).

While social connectedness can lead to increased resilience and a way to cope with stress, not all social connections appear to be positive for LGBTQ+ college students. This results from the kind of connections they form due to geographical location of the university (Ferris & Phillips, 2016), having to conform to a heteronormative identity based on the social expectations of those around them (Rankin, 2010), and using partying as a means of socializing (Longerbeam et al., 2007). LGBTQ+ students have also been found to engage in riskier behaviors, including substance use, when placed in a new environment where they can explore their personal values while solidifying their professional identity (Bernardon et al., 2011). The literature indicates that a relationship is likely between social connections that foster resilience vs. loneliness, and resulting drinking for LGBTQ+ students.

Despite the fact that fair number of qualitative studies have been conducted to study the aforementioned phenomena within sexual minority populations, few studies to date have been conducted to understand the quantitative significance between these phenomena, including

causal inferences between them. Specifically, research including DiFulvio (2011) and Lira and Morais (2018) has been conducted to understand the lived experiences of sexual minority students, including their social connections, how they cope with stress, their sources of resilience, and the relationship this all has to their mental and physical health outcomes. My current study offered an in depth look at the quantitative relationships between social connectedness, resilience, loneliness, and drinking for LGBTQ+ students by proposing a theoretical framework explaining stressors for LGBTQ+ students and how they might cope with said stressors.

Given the research done thus far, this study examined whether a relationship existed where social connectedness predicted resilience, and resilience, in turn, predicted drinking behaviors. Moreover, I also analyzed whether a mediating relationship existed between connectedness and drinking, specifically through the constructs of resilience and loneliness. The participant sample was a group of LGBTQ+ students ($N= 135$) for the primary research question, where SEM was used. The group of students was a subset of a larger group of participants, both heterosexual and LGBTQ+ students ($N= 253$) when assessing the mean differences in scores between the constructs for each group (LGBTQ+ vs. heterosexual participants). Regarding the primary research question using an SEM, I asked the following questions:

4. Will LGBTQ college students' degree of social connectedness (as measured by SCS-R; Lee et al., 2001) predict their level of alcohol use (as measured AUDIT- Daepfen et al., 2000)?
5. Is the relationship between social connectedness (as measured by the SCS-R; Lee & Robbins, 1995) and level of alcohol use (as measured by the AUDIT; Daepfen et al.,

- 2001) of LGBTQ+ college students mediated by their levels of trait resilience (as measured by the BRS; Smith et al., 2008)?
6. Is this relationship between social connectedness and level of alcohol use mediated by feelings of loneliness (Russell et al., 1980)?
 7. I also used regression to confirm the statistical power of the SEM analysis. Thus, I use confirmation analyses for the question of ‘Whether social connectedness predicts alcohol use and whether this relationship was mediated by resilience and/or loneliness?’

Discussion of Primary Research Findings

The subsequent sessions discuss the research findings to the primary questions as they relate to the final structural equation model presented in Chapter Four. Although an initial model was explored, there were not enough fit indices that indicated acceptable fit for the model to be considered an accurate depiction of the relationship among the data. Therefore, this section discusses the findings related to the final, modified structural model discussed in the previous Chapter (see Figure 10).

1. Social Connectedness:
 - a. Was a positive, direct and significant predictor of drinking within the LGBTQ+ students sampled via the AUDIT-C.
 - b. Significantly predicted resilience and the relationship indicated that social connectedness explains almost half of the variance of resilience scores.
 - c. Significantly and negatively predicted loneliness and the relationship between both indicated that social connectedness contributed to most of the variance in loneliness scores.

2. Resilience

- a. Did not significantly predict hazardous drinking for the LGBTQ+ students sampled
- b. Due to the aforementioned relationship and lack of significance, resilience therefore did not mediate the relationship between social connectedness and drinking as hypothesized.

3. Loneliness

- a. Did not significantly predict hazardous drinking for the LGBTQ+ students sampled
- b. Due to the aforementioned relationship and lack of significance, loneliness therefore did not mediate the relationship between social connectedness and drinking as hypothesized.

4. Regression Analysis

- a. Social connectedness was found to be a significant predictor of resilience
- b. Social connectedness was not found to be a significant predictor of drinking scores
- c. The predictive value of social connectedness on drinking was not significantly explained by resilience.
- d. The predictive value of social connectedness on drinking was not significantly explained by loneliness.

All findings regarding the primary research question analyses will be evaluated regarding the findings' similarities and differences from the current literature pertaining to these topics. Additional consideration will be given to the statistical rigor, impact, strength and explanation

for each findings. Finally, I will touch on recommendations for future research, implications for clinicians and higher education professionals, and limitations within the study.

Discussion of Findings Related to Social Connectedness

The following results were found pertaining to the construct of social connectedness and the other constructs.

Social Connectedness a Predictor of Hazardous Drinking

The original hypothesis was rejected, as social connectedness was found to have a significant positive effect on hazardous drinking of LGBTQ+ students. The results indicate that LGBTQ+ students reported that when they felt more socially connected to others, they were more likely to engage in hazardous drinking behaviors, perhaps as a way to relate to others, decompress, or explore their emerging identity as young adults. Thus, we fail to reject the null hypothesis; and instead, found a trend in the opposite direction. Regarding the literature, the findings are congruent with those of Busby et al. (2020). Specifically, it appears as though social connectedness was not necessarily a protective factor against hazardous drinking for LGBTQ+ students. In fact, there might be other constructs, such as positive identity affirmation that were not explored in this study which might account for students that drank to cope with negative emotions compared to students that did not drink in a hazardous way as a means of coping (Busby et al., 2020). Additionally, Woodford et al. (2015) noted that LGB friends specifically might act as a buffer against the negative effects of minority stress, including substance use. The confounding influence of having both LGBTQ+ and heterosexual-identifying friends might have contributed to this study's finding.

The social connections that participants experience are perhaps different than the ones that encourage healthy emotional processing and not resorting to drinking as a way to socialize

or solve problems, as differentiated by Parent et al. (2019). Based on guidelines from Riley et al.'s (2016) recommendations, it appears as though only focusing on social connectedness as a means of buffering against the effects of victimization (including drinking) may not be effective for this group of participants, or perhaps, connectedness-based interventions on campus were not implemented early enough when the participants were first year college students. Additionally, it could be that because this sample included students from all ages of college, social connectedness had unexpected effects on their drinking based on participants' respective year in college. For example, this group might have included LGBTQ+ students who are still using drinking as a way of socializing to find close friends, which is still typical in the early to middle years of college (Arnett, 2000).

Social Connectedness as a Predictor of Resilience

Social connectedness was a significant predictor of resilience among LGBTQ+ students. As students felt more socially connected to others, they found they correspondingly had higher levels of resilience where they were able to bounce back from stressful events. Thus, we confirmed the original hypothesis regarding social connectedness and resilience. The results from this finding confirm Livingston et al.'s (2016) findings that resilience and social support are related; however, the direction of relationship was found to be the inverse of previous literature. For this sample, higher levels of social connectedness was actually a predictor for stronger levels of resilience. This possibly explains previous research that social connections with others helps sexual minority students feel less isolated and engage in fewer maladaptive behaviors (Aleesi et al., 2017; Mancini, 2012; Zimmerman et al., 2017). Further, Mancini (2012) asserted that these connections allow LGBTQ+ students to succeed despite significant political and social barriers that affect their academic achievement and personal development. While connectedness to

specific groups was not specified in this study, it appears as though overall connectedness offers a protective buffer against some of the negative effects of minority stress for LGBTQ+ students.

Social Connectedness as a Predictor of Loneliness

Within this study, social connectedness was a significant predictor of loneliness and the relationship was inversed. As social connectedness was higher for participants, their sense of loneliness was lower. Similarly, if social connectedness was lower, participations felt less lonely. As a result, we confirmed the hypothesis showing that social connectedness was a significant predictor of loneliness outcomes. This finding confirms the previous research that shows social isolation is related to both feelings of loneliness and disconnection from others (Lewis et al., 2016; Salerno et al., 2020). The explanations for this finding make sense. If students are less socially connected to others, they will generally feel lonelier, whether it relates to the more homogenous culture of a smaller, rural college (Ferris & Phillips, 2016) or needing to conform to a different identity to maintain the heteronormative social structure of their institution (Rankin, 2010). Regardless of whether the campus structures resulted in feelings of victimization or discrimination for these students, the results indicated that connectedness was a clear indicator that students would also be less lonely than if they were more isolated from others. It is also possible that even if participants appeared to connect with other students on a regular basis, there was significantly less peer support based on the nature and purpose of connections formed (Ebersole et al., 2012; Longerbeam et al., 2007) In a later exploratory question, I will evaluate the levels of loneliness for LGBTQ+ students vs. heterosexual-samples students in consideration of the finding that LGBTQ+ students receive less social support (Christie, 2020; DiFulvio, 2011).

Discussion of Findings Related to Resilience and Drinking

Resilience was not found to be a significant predictor of drinking for LGBTQ+ students in this study. Thus, as levels of resilience changed within participants, their corresponding drinking levels were not significantly affected. We reject our original hypothesis that resilience will act as a protective barrier against drinking, where higher resilience levels result in lower levels of hazardous drinking. The results differ from research demonstrating that resilience can act as a buffering agent against the detrimental effects of minority stress, including substance use (Lira & Morais, 2018; Schmitz & Tyler, 2018). It is possible that this sample might have had confounding variables which were not accounted for in the original analysis, including the presence of varying levels of self-esteem (Woodford et al., 2015) and different kinds of coping skills from their social connections that did not necessarily directly relate to drinking (Craig et al., 2013). Additionally, given the reality of social connectedness being not related to drinking, it would be logical that resilience, which is heavily tied to connectedness, is likely not a predictor of drinking for this sample. Another reason the findings of this study were different than other studies pertaining to resilience is the nature of resilience itself not acting as a coping mechanism against detrimental drinking (Livingston et al., 2016).

As noted earlier, because resilience is measured in a singular score, it is possible that other types of resilience might be more predictive of drinking than the current measure. For example, as Mancini (2012) noted, close, emotional connectedness with individuals may be predictive of high levels of resilience due to these social connections. Additionally, some students may come to school with differing levels of trait-based resilience that existed irrespective of their LGBTQ+ status. Thus, perhaps if the specific type of resilience were noted, the relationship that resilience has with drinking could be explored in greater depth. While

shared experiences, emotional support and problem solving from others fosters a sense of resilience for LGBTQ+ individuals (Mancini, 2012; Zimmerman, 2017), there are other facets of resilience that were not specifically measured. Further, it is reasonable to deduce that resilience might differ among the various subgroups of LGBTQ+ individuals, which were not separately accounted for as a result of the final sample size as well as original research question being asked.

Resilience as a Mediating Variable Between Connectedness and Drinking

In this study, I hypothesized that resilience would mediate the relationship between social connectedness and drinking. Further explained, social connectedness would positively predict resilience, which would in turn, predict lower hazardous drinking scores. We fail to reject the null hypothesis- this study demonstrated there was no mediating relationship between social connectedness and drinking explained by levels of resilience for LGBTQ+ individuals. There are a few possible reasons for this finding. First, statistically, because resilience was not connected with drinking, it is impossible for the construct of resilience to mediate the relationship between social connectedness and drinking. Second, there might be other constructs which better explain the relationship than resilience. For example, it is possible that mental health outcomes in sexual minority students explains the relationship. Because mental health outcomes for LGBTQ+ students, including levels of depression and suicidality, are poor as a result of discrimination and feelings of rejection (Meyer, 2015; Woodford et al., 2014), LGBTQ+ students might be drinking with social groups in order to feel a sense of belonging, while mitigating these symptoms.

The results also indicate the Mereish's (2017) findings are worth further consideration. Specifically, social norms, including perceptions of the participants' behavior and whether the behavior was approved, were more related to disparities in substance-use for LGBTQ+ students

(Mereish, 2017). For this sample, it is possible that they are trying to fit in to conform to those social norms; however, that sense of trying to fit in is not captured within a measure of social connectedness. Thus, their sense of resilience would be less important in that scenario compared to a desire to conform or belong. The type of venues being socialized at might also explain why resilience does not mediate the relationship. Similar to Lea et al.'s (2013) findings, this sample might socialize more with other LGBTQ+ individuals, and thus drink at differing rates, and consequently, for different reasons than if they were at 'straight-oriented' venues. Finally, it is reasonable to assume that, as noted when explaining the relationship between social connectedness and drinking, the presence of positive identity (Busby et al., 2020), types of social connections to others (e.g. LGBTQ+ vs. heterosexual) (Woodford et al., 2015), and level of emotional intimacy of the connection (Parent et al., 2019) might implicate the results.

Discussion of Results Related to Loneliness and Drinking

Similar to resilience, loneliness was not predictive of hazardous drinking scores for LGBTQ+ students. This finding failed to reject the null hypothesis that there was no predictive relationship between the two constructs. These findings counter those of Ebersole et al. (2012), who found that LGBTQ+ students are more likely to turn to drinking than their heterosexual peers as a means of coping. While it's possible that the relationship does not exist, another problem could be the sample size. The relationship was nearing significance and thus, had more participants data been collected, the true significance of the relationship might have been detected. If the relationship does not exist within the sample, there are a few reasons why this occurred. For example, both Grant (2009) and Longerbeam et al. (2007) noted that LGBTQ+ individuals drink in social settings rather than in solitary environments to cope with stressors, such as loneliness. If this is the case, participants might not perceive themselves as lonely

because they are surrounded by others when they are drinking (i.e. bonding over doing the same activities as them).

Fitting in and overcoming loneliness is a problem for many college students, but this hurdle is often greater for LGBTQ+ students (Bernardon et al., 2011; Schmidt et al., 2011). It is possible that, in addition to the settings in which they drink, LGBTQ+ students who are more engaged in activism (i.e. a form of social connection to others) are more likely to drink hazardously and engage in other risk-taking activities (Morse et al., 2019). This study did not take include questions related to campus involvement or activism, which might have confounded the relationship. Additionally, Christie (2020) found that SMW generally have more social support than SMM; additionally, this study included more SMW (e.g. bisexual and lesbian women) than SMM which might have skewed the results in a direction where loneliness was not as prevalent compared to a more representative sample. Overall, it appears as though there might be a relationship between loneliness and drinking; however, for the reasons listed above, this sample did not quite reach significance in that relationship.

Loneliness as a Mediating Variable Between Connectedness and Drinking

Because there was not a statistically significant relationship between loneliness where levels of loneliness predicted hazardous drinking, we failed to reject the null hypothesis that no such relationship exists. As a result, statistically speaking, a mediation relationship is therefore not possible. However, given the literature pertaining to loneliness reviewed above, it is likely that a relationship might possibly exist; however, this did not happen within the sample due to representativeness of the sample (Christie, 2009), settings in which participants' drank (Grant, 2009; Longerbeam et al., 2007), or the groups in which LGBTQ+ individuals are a part of that encourage risk-taking activities (Morse et al., 2019).

There are additional reasons, according to the literature, that loneliness might not be a mediating variable that explains the relationship between social connectedness and drinking. As noted earlier, perhaps it is the quality of these relationships, the nature and reasons social connections formed, and feeling disconnected from others who they socialize with that indicates whether LGBTQ+ students turn to drinking to cope (Ebersole et al., 2012; Lewis et al., 2016; Salerno et al., 2020). Minority stress theory indicates that negative effects, including poor mental health outcomes, substance use, and general feelings of stress result from the heteronormative social structures that render it difficult for LGBTQ+ students to feel like they fit in or are allowed to be authentically themselves. (Meyer, 2003; Meyer, 2015). Therefore, there is a distinction between campus connectedness and social connectedness which warrants further investigation. This will be discussed in more detail in a later section that outlines recommendations for future research as a result of these findings.

Regression Analyses

Linear regressions were conducted in order to validate the findings of the SEM, given the sample size. I was able to confirm statistical power through this analyses. The results of the regression analyses also failed to reject the null hypothesis that no mediating relationship existed between the constructs. Nevertheless, social connectedness was predictive of both resilience and loneliness, which still has interesting implications worth consideration for clinicians, higher education staff, and other human services professionals working with LGBTQ+ college students. As noted earlier, social connectedness was found to be positively correlated with drinking, thus we also failed to reject the original null hypothesis regarding this relationship.

Social Connectedness as a Significant Predictor of Resilience

Summarizing what was discussed above, the regression analyses did support the hypothesis that higher levels of social connectedness would predict higher levels of resilience, and vice versa. While the relationship was found to be opposite of Livingston et al.'s (2016) findings, where resilience actually predicted levels of social support (i.e. a related, but slightly different construct), social connectedness actually predicted levels of resilience in this study. It is likely that, similar to other research findings, LGBTQ+ students who generally reported feeling less isolated and less likely to engage in detrimental or self-destructive behaviors (Aleesi et al., 2017; Mancini, 2012; Zimmerman et al., 2017). However, it is worth noting while higher connectedness increases resilience, it also in turn leads to higher levels of hazardous drinking. Therefore, there might be cultural norms associated with experimental (albeit heavy) drinking which are prominent and in some respects considered developmentally-normal in college students broadly (Arnett, 2000; Chickering & Reisser, 1993). Additionally, the connections might foster resilience, but because resilience is not related to drinking, there are other constructs, including mental health outcomes (Meyer, 2003; Meyer, 2015) or positive identity development (Parent et al., 2019) that might be more associated with the need to drink to cope with or escape negative feelings.

Social Connectedness and Levels of Drinking

For this sample, higher levels of social connectedness were not predictive of higher levels of hazardous drinking; however, there was a positive relationship between them and this was only conducted with the 10-item AUDIT scale. There are a couple of possible reasons for these findings, which are similar to the results of the original model before re-specification. It is likely that other constructs, such as comfort level with LGBTQ+ identity (Busby et al., 2020) and the

presence of both LGBTQ+ and heterosexual-identifying friendships (Woodford et al., 2015) that might have influenced the findings (i.e. whether connectedness is not related or is positively related to hazardous drinking). Another likely explanation for this finding is that social connectedness to others does not necessitate the connections being intimate and supportive (Parent et al., 2019). Specifically, while LGBTQ+ students are more likely to be at-risk for drinking as a result of commonly-experienced minority stressors (Meyer, 2015), they might drink differently depending on the social settings and with whom they are spending time.

Additionally, because social interactions might still be new for these students, they have not had quite enough time in social environments to be positively *or negatively* influenced by their circle of peers (Riley et al., 2016). There are also confounding variables in that SMW, which were heavily represented in the sample, are more likely to engage in hazardous drinking compared to SMM (Hughes et al., 2016). However, the sample contained both; therefore, a relationship might be more difficult to identify and generalize to LGBTQ+ students broadly. Additionally, the AUDIT performed poorly as a whole compared to the AUDIT-C, which has been used in studies frequently to identify drinking behaviors among college-students and is more accurate than the AUDIT (DeMartini & Carey, 2012).

Loneliness and Resilience as Non-mediators

Similar to the findings with the SEM, both loneliness and resilience were not mediators of the relationship between social connectedness and hazardous drinking. First, the relationship could not exist because the SCS-R scores did not predict scores on the AUDIT, only the AUDIT-C. Therefore, logically and statistically, the possibility for mediators is non-existent, including both levels of loneliness and resilience. Furthermore, as described above, there are a number of sound reasons why we failed to reject the null hypothesis that no such mediating relationship

exists. Mereish (2017) found that drinking for LGBTQ+ students was influenced by social approval and modeling others around them. It is possible that, especially for some college campuses represented in this study, drinking is a larger of a part of campus culture for some compared to others. Therefore, constructs such as loneliness and resilience are less relevant compared to the social norms centered around alcohol consumption. Additionally, the types of social connections (e.g. LGBTQ+ vs. non-LGBTQ+, intimate vs. non-intimate) are not specifically accounted for, which might explain disparities and lack of a consistent relationship between resilience and drinking (Lea et al., 2013; Woodford et al., 2015).

Loneliness is also not significantly predictive of drinking; thus, I failed to reject the null hypothesis. Similar to resilience, loneliness not acting as a mediating variable might be explained for a few reasons. For example, the quality and closeness of social relationships, the reasons for the social connections (e.g. partying, shared activities, similar identity), and feeling generally disconnected from others who they socialize with that indicates whether LGBTQ+ students turn to drinking to cope (Ebersole et al., 2012; Lewis et al., 2016; Salerno et al., 2020). All of these constructs are likely to impact and explain why some social connections lead to hazardous drinking for LGBTQ+ students and might overlap with, or significantly overshadow, the impacts of loneliness.

Discussion of Exploratory Research Questions

There were a few exploratory questions that I hoped to analyze from the findings of this study. The questions were formed as a result of the literature regarding the presence of hazardous drinking, social connectedness, levels of resilience, and loneliness in LGBTQ+ vs. heterosexual college students. Additionally, I explored whether the aforementioned constructs, in addition to COVID-anxiety were statistically correlated. The specific questions included:

- c. Was there a statistically significant difference between LGBTQ+ participants and heterosexual participants on the constructs investigated in the study?
- d. What was the relationship between COVID anxiety and the other constructs, as well as the relationships between each construct?

For the first exploratory question, it was hypothesized that LGBTQ+ students were significantly lonelier, less connected, less resilient and drank at higher levels. Regarding the second exploratory question, it was hypothesized that there would be statistically significant relationships between all constructs, including COVID-19 related anxiety. The exploratory questions were given to provide additional findings that contextualize the primary research questions while laying the groundwork for additional research in future studies. The implications of these findings will be discussed in a later section of the chapter.

Differences in Levels of Social Connectedness

The results supported my original hypothesis that LGBTQ+ students were significantly less connected than heterosexual students. Social connectedness was in fact statistically lower in LGBTQ+ students compared to heterosexual students. There are a couple of reasons for this finding. First, using the minority-stress theory (Meyer, 2003) as a theoretical framework, this finding makes sense as LGBTQ+ students are still navigating predominantly heterosexual college environments, even when colleges are ‘LGBTQ+-friendly.’ In other words, the heteronormative atmosphere, with related social expectations and less representation of LGBTQ+ students compared to heterosexual students, results in these students feeling less connected to others (Meyer, 2015) This discrepancy is consistent with findings in many studies where LGBTQ+ students have fewer social connections (Branstrom et al., 2015; DiFulvio, 2011; Pachankis et al., 2014).

It is highly likely this group of students still feels the effects of being a marginalized group, including feelings of victimization, such as sexual violence (Coulter & Rankin, 2020) as well as subtler forms of being victimized. Other studies have found the reason LGBTQ+ students turn to unhealthy coping mechanisms included heterosexist remarks and actions within their campus culture (Dworkin et al., 2018; Woodford et al., 2012). Heterosexual students, on the other hand, still experience feelings of loneliness and struggles with connecting to others while solidifying their identity (Hurst et al., 2012); however, campus cultures tend to predominantly cater to heteronormative ideals surrounding friendships, social gatherings, groups/social organizations, dating expectations, and socializing in general (Woodford & Kulick, 2015). Therefore, they are likely to feel overall more socially connected to their peers. This is a logical assertion given that they are living in a world that is not readily conducive to their psychosocial development.

Differences in Levels of Resilience

The original hypothesis regarding resilience was that LGBTQ+ students showed significantly lower levels of resilience compared to their heterosexual counterparts. I failed to reject the null hypothesis that there was not a statistically significant mean difference between LGBTQ+ vs. heterosexual students regarding resilience. Interestingly, while the results were not significant, they become more significant with more participants; therefore, it is entirely possible that a true difference was not detected based on the sample size. Additionally, if the difference is statistically significant, LGBTQ+ students did in fact average lower resilience scores compared to heterosexual students. Nevertheless, the findings might be explained by differences in personality traits irrespective of LGBTQ+ status (Livingston et al., 2016; Meyer, 2015). Specifically, if some individuals have resources and dispositions that lend them to being more

resilient in the face of stress, then these factors might impact variance of resilience levels more than sexual identity. Because this study identified a single measure of resilience, it is important to note that trait resilience compared to community resilience was not differentiated within the sample (Hall & Zautra, 2010; Meyer, 2015), which could explain the non-significance.

If there is no statistically significant difference, then the findings might further be explained by differences in how LGBTQ+ individuals cultivate resilience (Mancini, 2012; Meyer, 2015), including tangible and intangible resources, community role models vs. norms, values, or personality traits, which are confounding variables that could impact the scores on the resilience measure. Furthermore, because the results were near significance levels, if the relationship does exist, then the argument that LGBTQ+ individuals experience adverse psychological reactions (e.g. resilience) to stress as a result of their social environment (Meyer, 2003; Meyer, 2015) is bolstered. Because the sample size was smaller, and comprised of a fair number of non-Caucasian participants, it is likely that intersecting identities affects the pathways by which different racial group finds resilience within their community (McConnell et al., 2018). Further research, which will also be discussed later, should include a larger sample size to determine if the difference in resilience levels between LGBTQ+ and heterosexual-identifying students truly exists.

Differences in Loneliness

We rejected the null hypothesis by finding that LGBTQ+ students were significantly lonelier compared to heterosexual students. The results of this study are not surprising given the research on loneliness that exists for LGBTQ+ sexual minority students. Specifically, this mean difference in loneliness confirms the results of studies showing that LGBTQ+ individuals feel less social support (i.e. feel lonelier) than their heterosexual peers (Christie, 2020; DiFulvio,

2011). LGBTQ+ students social isolation (i.e. less socially connected) can largely be attributed to feelings of loneliness and disconnection from others based on the world they live in and the resulting social expectations (Lewis et al., 2016; Salerno et al., 2020). Thus, while loneliness is indeed a normal part of emerging adults journey into finding themselves during their college years (Hurst et al., 2012), there appears to be a compounded effect for students who identify as LGBTQ+, which has significant implications for college programming.

It does seem as though the sample faces systematic challenges in finding peer support to assist them with life stressors, which has been seen in previous research (e.g. Schmidt et al., 2011). Furthermore, because this sample included students from rural schools, they tend to experience loneliness at greater levels than their heterosexual peers, given the relatively isolated setting and more conservative culture of their campus (Ferris & Phillips, 2016). Even at non-rural schools, it is likely that, because the college environment is usually heteronormative at its core (e.g. intramural sports or fraternities), LGBTQ+ students face isolation in a way their heterosexual peers do not (Longerbeam et al., 2007). Because LGBTQ+ students report significant levels of loneliness compared to heterosexual students, there are a number of implications for higher education professionals, clinicians, and other workers in the helping field. These implications and recommendations for additional research will be addressed in a later section.

Differences in Levels of Drinking

The levels of drinking were significantly different between LGBTQ+ and heterosexual students; however, the relationship was not in the expected direction. On both the AUDIT and the AUDIT-C, heterosexual students drank more on average than their LGBTQ+ counterparts. There are a few possible reasons for this finding, which diverged from the reviewed literature

pertaining to hazardous drinking rates for sexual minorities. However, this finding was also congruent with previous research. For example, Lee et al. (2016) found that college acted as a protective factor for SMW regarding social norms with drinking and frequency of drinking, providing a buffer against the effects of minority stress. This sample, which is predominantly SMW, might experience their college experience as a helpful buffer against detrimental or hazardous drinking. Additionally, similar to Longerbeam et al.'s (2007) findings, the presence of structured communities, including residence halls and social organizations, assist sexual minority students with framing their experiences in a positive way, thereby reducing the likelihood they would turn to drinking to cope.

This study significantly diverged from the notion that LGBTQ+ students, irrespective of the level of incivility or hostility they witnessed as a result of their identity, are more likely to drink at higher levels than heterosexual students (Woodford, 2012; Winberg et al., 2019). It is also possible that this sample is not turning to drinking as a means of coping in social situations (e.g. Ebersole et al., 2012); rather, there may be other reasons such as fitting in and other social rituals endemic to many college students (Vander Ven, 2011). Another possibility is the fact that the sample was composed of SMW and SMM. Some studies indicate that SMW are more likely to report higher levels of drinking as a way to cope with minority stress than SMM (Dworkin et al., 2018; Longeream et al., 2007). Thus, the representativeness of the sample might have skewed the data, whereas substance may still be a problem, just not with alcohol (Hughes et al., 2016). Additionally, heterosexual students appear to drink at higher levels in this sample than LGBTQ+ students. This might indicate a problem that is not related to Minority Stress Theory, per se, but rather a developmental consideration pertaining to college students (Chickering & Reisser, 1993)

or adjusting to a new situation where so many aspects of students' lives are in transition (Hurst et al., 2012).

Differences in COVID-Related Anxiety

There was no statistically significant difference between LGBTQ+ vs. heterosexual students regarding their COVID-19 related anxiety. Thus, we fail to reject the null hypothesis that there is no difference between the two populations regarding their reaction to the COVID-19 pandemic. Given that the literature is sparse on the effects of the pandemic on both college students broadly, and more specifically the LGBTQ+ student population, there are few studies that support this finding. This finding does differ the results of Salerno et al.'s (2020) hypothesis that mental health and the responses to social distancing are compounded and experienced more negatively in vulnerable populations such as the LGBTQ+ student community. However, this published article was a brief literature review citing previous research to support Salerno et al.'s (2020) arguments. Additionally, there are not enough examples of replication studies providing evidence for reliability and validity of the scales being used within vulnerable populations. Therefore, there are no conclusive discussion points except that, for this sample, LGBTQ+ and heterosexual students had similar levels of COVID-related anxiety, and thus, it could be argued, are responding to the social-requirements of COVID-19 pandemic in a similar psychological manner, particularly regarding their scores on the measured constructs.

Correlations Between COVID and other Constructs

The final exploratory question involved finding the correlations between the related-constructs, including the degree to which each construct correlates with COVID-19 anxiety. Given the previous literature (e.g. Busby et al., 2010; Woodford et al., 2015), it stands to reason that social connectedness is in fact positively and significantly correlated to scores on the

AUDIT-C however, this was not the case for the AUDIT. It is entirely likely that the AUDIT-C performs better overall with college students (DeMartini & Carey, 2012), which explains the discrepancy in correlations between the two instruments. Additionally, social connectedness was significantly predictive of both resilience and loneliness, as noted by the rationales and findings of previous research (e.g. Livingston et al., 2016; Zimmerman et al., 2017). One finding of note is that COVID-19 anxiety related significantly to resilience in that more resilient participants were less anxious and vice-versa. Because literature is so new regarding the effects of COVID-19 on vulnerable populations, this is an area of recommended research; however, reasons for this finding are unclear at this time. Additionally, resilience was significantly related to loneliness in that high scores of resilience are associated with lower scores of loneliness. This is a logical finding given that social connectedness is highly related to loneliness and social connectedness is positively correlated with resilience.

Discussion of the Proposed Model

The most acceptable model indicated that social connectedness was significantly and positively predictive of resilience, and significantly but negatively predictive of loneliness. Interestingly, higher levels of social connectedness was also predictive of higher levels of drinking, but only for the AUDIT-C (i.e. first three items on the AUDIT). Additionally, neither resilience nor loneliness mediated the relationship. It stands to reason that there are other variables that impact the relationship. Moreover, I argue that there are a few main aspects of this specific model that render it unique in the current literature regarding the experiences of LGBTQ+ students.

First, social connectedness is highly related to resilience in that the more connected students are, the more resilient LGBTQ+ students are in being able to overcome obstacles and

bounce back from stressful events. This is a confirmation of the findings that connectedness to others for LGBTQ+ students increases the ability to be resilient through trials and tribulations (DiFulvio, 2011; Kulick et al., 2017), which are likely experienced on an individual and systemic level during their college experience (Meyer, 2015). This connectedness to others includes feeling understood by and emotionally close to others (Lee et al., 2001). However, while connectedness increases their ability to be resilient, it also increases their hazardous drinking, which is one possible outcome of experiencing minority stress (Meyer, 2003). Therefore, it seems that while connectedness is important as a way to navigate stressors in life, it is not enough to mitigate the effects of hazardous drinking.

Previous researchers that claimed connectedness and feeling socially-involved mitigated the effects of drinking for LGBTQ+ college students are not depicting an accurate and complete picture. It is likely that the types of connections matter (e.g. having straight vs. LGBTQ+ friends; Woodford et al., 2015), and that additional constructs such as affirmation and acceptance of ones LGBTQ+ identity (Busby et al., 2020) or perhaps other mental health outcomes (Silva et al., 2015) have a possible impact on how students use substances. For example, if students are connected to friends but are less confident about being out and affirming of their identity, or conversely, if students have friends but those friends are ones with whom they engage in partying behaviors (Longerbeam et al., 2007), having social connections is not enough to ameliorate the negative academic, psychological, and professional impacts of detrimental drinking.

Additionally, while low levels of connection are indicative of higher levels of loneliness, loneliness in and of itself does not lead to hazardous drinking for every subsample of LGBTQ+ students. In fact, because LGBTQ+ individuals often drink in social settings (Grant, 2009;

Longerbeam et al. 2007), it is possible that feelings of loneliness lend them more likely to spend time by themselves, with less access to alcohol or desire to drink. Given the current political and social climate at certain schools, particularly at large, urban campus where many participants attended, the level of activism and outness actually increases risk-taking behaviors, including heavy drinking as a way of bonding and trying new experiences (e.g. Morse et al., 2019).

However, it also appears that the sample representativeness might have skewed the data as generally, SMW are more connected than SMM (Christie, 2020). Therefore, not only do subgroups within the LGBTQ+ community have differences in their levels of connectedness and loneliness, but the types of social connections a student has (i.e. activist groups, social groups, intimate groups of friends) might significantly impact whether or not that student turns to alcohol to either escape from negative feelings, relieve stress, or cope with feelings of discrimination. Another important takeaway from this structural model is the fact that the relationship between connectedness and drinking is more complicated than accounting for how resilient those students are and whether those connections result in loneliness or a sense of feeling understood by others. It is likely that other factors mediate or moderate this relationship. Such factors might include mental health outcomes (e.g. levels of anxiety/depression), extent of comfort with LGBTQ+ identity, general emotional/social growth over young adulthood, personality traits, or demographic factors. In sum, the relationship is more complicated and warrants further exploration. I will now describe the limitations, implications, future directions, and overall conclusions of this study.

Limitations

Similar to other studies, there were a number of limitations within this study that should be taken into consideration in light of the findings. First, the sample size was lower considering

that some recommendations for SEM require around 150-200 participants (Wolf et al., 2013). For this reason, there might have been enough statistical power to find certain relationships that did in fact exist. To combat this, I used regression analyses to confirm the statistical power of the findings. Additionally, the sample size was adequate to perform the regressions, MANOVAs, as well as correlations. Because this sample recruited from a hard-to-reach population (Guillory et al., 2018) (i.e. who are vulnerable and susceptible to systemic oppression), it is likely that a further study with fewer time constraints might allow me to find a strong sample size. It's also important to understand that levels of outness might impact whether or not a participant felt comfortable identifying as a member of the LGBTQ+ community when deciding to participate in such a study (Reed et al., 2010).

Similar to other studies underscoring the experiences of LGBTQ+ individuals, there is limited representativeness from the findings. The sample was comprised of a plurality of SMW, as well as Caucasian participants. It is very likely that other subgroups of LGBTQ+ students, such as SMW, trans individuals, or LGBTQ+ individuals of color have vastly different experiences regarding connectedness, resilience, loneliness, and drinking that warrants additional consideration. In order to combat some of the realities of limited external validity, I ensured that schools were geographically representative of larger cities, smaller rural areas, suburban regions, and most importantly, different areas spread out the United States. LGBTQ+ student experiences will vary depending on the region of the school they attend, the campus climate of that institution, and the social and political climate of their hometowns (i.e. more socially conservative vs. more socially liberal). Additionally, the demographic diversity of participants from varied racial and ethnic backgrounds within this study is indicative that perhaps certain problems of connectedness and resilience are endemic in the target population of this sample (i.e.

full-time LGBTQ+ college students who range from ages of 18 to 28). It is important to note that these findings cannot be generalized to part-time students, those who did not attend higher education, or LGBTQ+ adults of a similar age who have not taken a ‘traditional’ path of higher education. Finally, because a self-report survey was relied on, particularly during the COVID-19 pandemic, there is a possibility that the results are not accurate or representative of individual participants’ experiences due to response bias or the effect of social desirability.

Another limitation within this study is the fact that certain constructs, such as mental health symptoms, positive identity affirmation, and types of social connections were not able to be studied due to limitation in time and logistical constraints. Therefore, while SEM provides sound reasoning from which a causal relationship can be inferred, it should be noted that scores in one construct (e.g. social connectedness) did not explicitly cause scores (e.g. resilience) within constructs. There are other factors to be taken into account within both a minority stress framework as well as a developmental framework considering the psychosocial needs of young LGBTQ+ adults in higher education (Arnette, 2000; Hurst et al., 2012; Meyer, 2015). Nevertheless, there are a number of important implications that can be taken away from his study in addition to future research that should be considered as a result of both the research findings and limitations with generalizability.

Implications for Clinicians and Higher Education Faculty

There are a number of significant implications that should be considered given the results of this current study within the context of previous research. First, it is important that social connectedness can significantly increase resilience for LGBTQ+ adults who are full-time college students. This underscores the importance of counselors helping clients foster emotional closeness, social support, and a sense of connection to others, particularly at this vulnerable age

when clients are undergoing so many personal and professional transitions (Hurst et al., 2013; Mancini, 2012). For example, practicing ways to maintain reciprocal relationships should be actively discussed in sessions with LGBTQ+ college students. Counselors can help clients identify what ways their social connections help bolster their sense of resilience. Understanding this link can help clients find specific ways to cope with stress (Hatzenbuehler et al., 2011), regulate their emotions (Livingston et al., 2016), and have help problem solving to normalize their reactions to either expected, age-appropriate obstacles or minority stressors they experience as a result of their LGBTQ+ identity (Zimmerman, 2017). Therefore, counselors have a unique opportunity to help clients find sources of both formal and informal support so that clients do not resort to negatively internalizing these experiences or cope with them in self-destructive ways.

A second major implication based on this study is the idea that connectedness is not necessarily predictive of responsible drinking behaviors as indicated by previous research. Often, higher education professionals attempt to foster campus connectedness by promoting organizations and programming to increase connectedness among students while encouraging their development as young adults. While the intentions behind this reasoning are noble, it appears as though simply providing a space for LGBTQ+ students, through GSAs, LGBTQ+-specific Greek life or other social organizations, is not enough to prevent those students from engaging in hazardous drinking. Therefore, program outcomes, including follow-up surveys and additional campus-wide initiatives or longitudinal research should be conducted by campuses to determine whether or not these spaces for LGBTQ+ students encourages more hazardous drinking than intended (e.g. Longerbeam et al., 2007). Additionally, there are a multitude of other minority stressors, including poor mental health outcomes, satisfaction with academic experience, and troubles with financial and family support, that warrant additional

attention from professional when planning programming that can support incoming and current students from diverse backgrounds (Garvey et al., 2017).

Generally, it is likely the quality of connection that matters regarding health outcomes for LGBTQ+ students compared to whether or not the connection exists in the first place. Therefore, it is paramount for higher education staff to include activities that increase emotional closeness and vulnerability within student groups in a developmentally appropriate and culturally-competent manner. For example, summer bridge and orientation programs between high school and undergraduate studies should include specific events that involve students discussing topics related to sexual orientation and gender expression. Moreover, guided facilitators for these programs should be specifically trained with an understanding of the Minority Stress Model (Meyer, 2003) to have a vocabulary and theoretical framework by which they can ask questions about students' thoughts and feelings when transitioning to school.

Conversations and activities that help illuminate sources of concrete support for these students, and sharing those concrete ideas with other students, will be paramount to provide feedback and emulate the kind of support that students will need to seek as they transition to college. For the college student population broadly, microaggressions toward LGBTQ+ individuals and the direct and indirect they have on LGBTQ+ students should be actively touched upon in these orientation and summer programs, with room for continued formal discussion and training as required aspects of their transition to college. Students, faculty and staff who identify as LGBTQ+ should be represented in these events on a volunteer basis and be active stakeholders in meetings where these events are planned and when discussions around student equity and justice occur. Having a more nuanced understanding of the realities of minority stressors experienced, these individuals will provide specific, culturally-competent

ways to better existing programming, elicit feedback from students, and use both quantitative and qualitative data to continue identifying areas where LGBTQ+ students require further support.

To my knowledge, this is the first study that empirically tested LGBTQ+ students' level of connectedness on the negative impacts of minority stress (e.g. substance use) while accounting for the possible mediating influence of resilience as well as loneliness. Because minority stress theory is so all-encompassing (Meyer, 2003; Meyer, 2015), there are many factors that can more fully explain relationships between LGBTQ+ students' social environments and their physical and mental health outcomes as a result of that environment. The findings from this study add to the milieu of literature regarding LGBTQ+ students. Specifically, social connectedness, while it is predictive of resilience, is not necessary a mitigating influence on alcohol use for LGBTQ+ students, giving context to previous literature (Woodford et al., 2015; Parent et al., 2019) that indicated rejection, isolation, and a lack of supportive connections will predict whether LGBTQ+ students turn to drink in order to cope. Therefore, alcohol use for LGBTQ+ students might result from a more nuanced pathway of internalizing stress than initially proposed by Meyer (2003). In other words, socially-based stressors might slightly influence hazardous drinking; however, other facets of LGBTQ+ experience or perhaps being a college student in general are more significantly related to detrimental alcohol use.

I also recommend that campuses actively promote counseling services, including psycho-educational groups, individual outpatient services, and substance use counseling, to address the different social and psychological influences that affect LGBTQ+ students. Though LGBTQ+ students experience more satisfaction with their campus climate compared to generations ago (Garvey et al., 2017), this study indicates that LGBTQ+ students are still less connected and

lonelier than heterosexual students. Additionally, it is possible that resilience is also implicated for these students as a result of their minority status. Clinicians would do well to help LGBTQ+ students process topics of connectedness, resilience, and loneliness so they can find concrete strategies to feel more engaged, less isolated, and engage in healthier coping strategies. Because alcohol use seems to be higher for heterosexual students in this study compared to LGBTQ+ students, consideration should be in sessions to exploring what substances, if any, are used at higher rates among LGBTQ+ students and what purpose these substances serve. A main takeaway point from this study is that connectedness, resilience, and loneliness are clearly related and often implicated for LGBTQ + students. If admission departments or campus-wide initiatives do not include these topics when trying to engage, recruit, and reach students from the LGBTQ+ community, they will likely see less engagement, interest, and buy-in from already marginalized students. This might increase drop-out rates for LGBTQ+ students, affect alumni engagement from LGBTQ+ graduates, and mar the reputations of institution within national higher education networks that espouse the importance of student equity, diversity and inclusion.

Recommendations for Future Research

There are a number of different avenues that future researchers can take based on the results and implications of this study. First, additional research should explore the role of connectedness, resilience, loneliness, and alcohol or substance use within specific subgroups of the LGBTQ+ community. This includes SMW, SMM, bisexuals, trans individuals, those who identify as non-binary/queer, as well as LGBTQ+ individuals from more diverse racial and ethnic backgrounds (e.g. Dworkin et al., 2018; Miranda et al., 2015). While I argue that this study is a good starting point in advancing our understanding of these topics, it is important to note that individual LGBTQ+ students' experiences cannot be generalized to the larger

community. Second, I recommend that future research specify the effects of different types of connectedness on minority stressors such as substance use. For example, the presence of LGBTQ+ friends compared to heterosexual friends, active/social/fraternity groups vs. small, intimate friend groups are likely to produce different results related to hazardous drinking, resilience, and feelings of loneliness. It is entirely possible that certain connections act as a protective buffer against the impact of minority stress while others promote unhealthy coping strategies (Mancini, 2012; Meyer, 2015).

Third, future research should include other types of substances, such as marijuana or party drugs that might fully capture the degree to which LGBTQ+ students use these substances. Hazardous drinking is only one outcome of minority stress (Meyer, 2003); however, there is strong research that indicates other substances might be preferred over alcohol by certain subgroups of LGBTQ+ students (Lea et al., 2013; Winberg et al., 2019). While alcohol is a frequently used substance on college campuses, there is access to substances that might be used in a hazardous manner by students undergoing discrimination and victimization. Finally, future studies should address other constructs including mental health status, identity affirmation, gay identity development, and level of familial support to understand how these variables impact LGBTQ+ students' social and academic experiences. These psychosocial variables have varying influences on the lives of college students broadly; however, future studies should focus on students who identify as LGBTQ+.

Conclusion

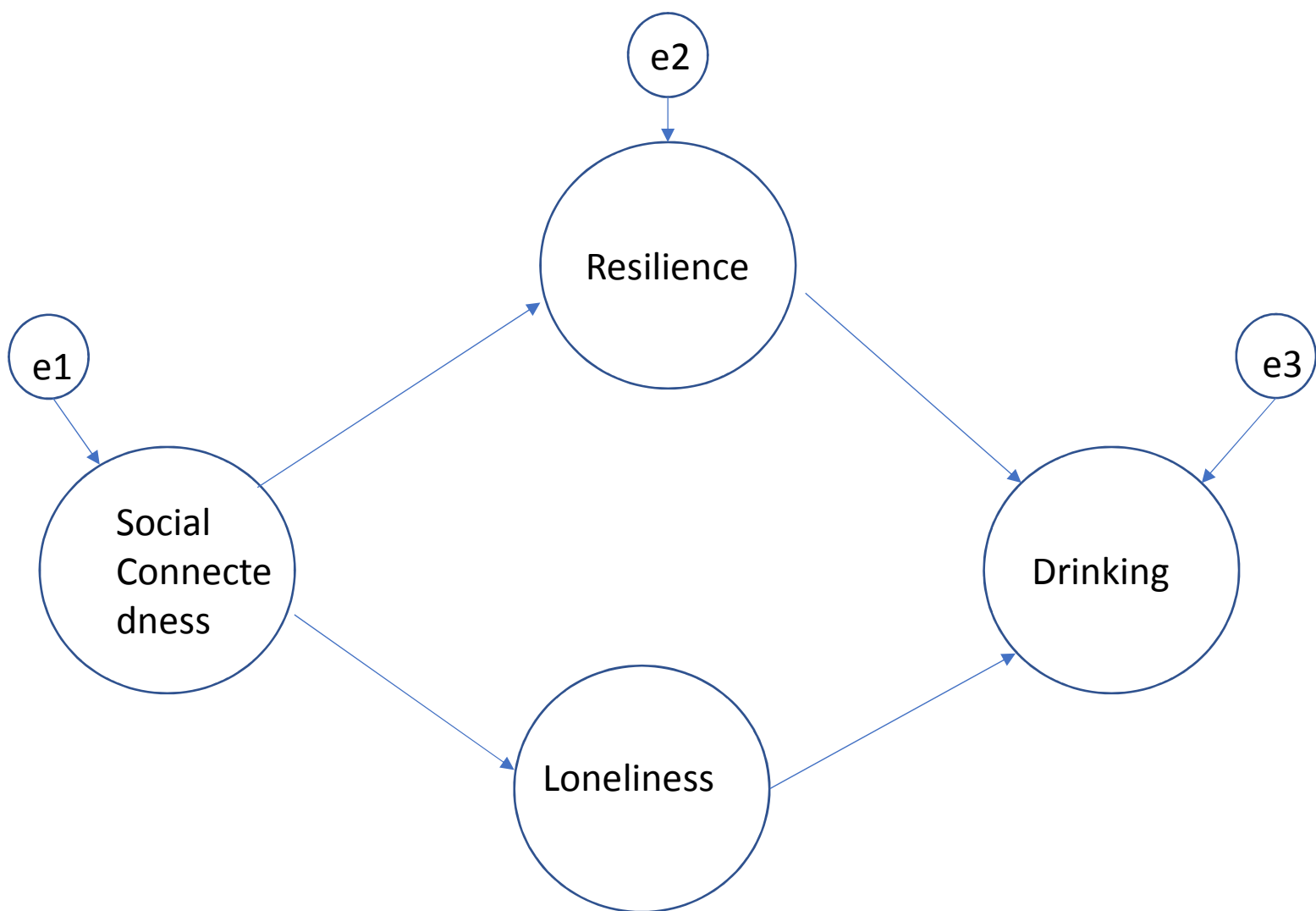
This study examined the relationships between social connectedness, loneliness, resilience, and hazardous drinking for LGBTQ+ college students. While social connectedness was predictive of both resilience and loneliness in the hypothesized, positive direction, it was

also associated with increased hazardous drinking for LGBTQ+ students, but only for the AUDIT-C. Neither loneliness nor resilience moderated the relationships between connectedness and hazardous drinking. Additionally, neither loneliness nor resilience was predictive of hazardous drinking for LGBTQ+ students. Overall, LGBTQ+ students differed in their scores relating to drinking, social connectedness and loneliness compared to heterosexual students.

While the effect sizes of the findings were small to medium, there were a number of significant implications relating to the psychosocial realities of LGBTQ+ students on college campuses. This study added to the literature pertaining to the role of connectedness in fostering resilience, and how generally, LGBTQ+ students still feel less socially connected than their heterosexual counterparts. Clinicians, higher education professionals, and other who work directly with these students would do well to understand ways to healthily process these topics while assisting them with building healthy, supportive connections that can bolster the effects of minority stress experienced. Indeed, connection with others offers ways to cultivate a more healthy lifestyle for LGBTQ+ students, where they can lean on one another for support, validation, and grow from these relationships.

APPENDICES

Appendix A: Original Structural Model



Appendix B: Email for Participant Recruitment

Hello!

I hope this email finds you well and that the pandemic isn't affecting you too much! My name is Nathaniel Mason and I am a third-year doctoral candidate at the W&M School of Education in Counselor Education. I am conducting research pertaining to LGBTQ+ college students and measures in resiliency, connectedness, loneliness, and how these impact drinking behaviors.

I feel very committed to this population as a member of the community myself. I am wondering if there is a way you would be able to send a recruitment message out to your students. If possible, I am happy to know of any contacts you might have that would be a great resource for this study.

I greatly appreciate your time in answering this email. I look forward to hearing from you!

My name is Nathaniel Mason and I am a 3rd-year doctoral candidate in the Counselor Education and Supervision Program at William & Mary's School of Education. I am in the process of recruiting for my dissertation on LGBTQ+ undergraduate experiences and would love your participation! **You will automatically be eligible for a chance to win one of a few 50.00 Amazon gift cards.**

Your input is invaluable to the counseling profession in understanding whether and to what extent connectedness and sense of resilience relate to our substance use. This survey will take no more than 10-15 minutes.

In order to participate and be eligible for the incentive below, you must be a current full-time undergraduate student at a four-year institution, between the ages of 18-24. The results of this survey will be confidential.

Please do not hesitate to contact me if you have any questions! I look forward to hearing from you.

Survey link:

https://wmsas.qualtrics.com/jfe/form/SV_8uJz6Nw2uwgkPOJ

Appendix C: Informed Consent

You have been invited to participate in a research study entitled *Leaning on One Another: An Exploration of the Relationship Among Social Connection, Alcohol Use, and Resilience in LGBTQ+ College Students* conducted by Nathaniel Mason, a doctoral candidate at William & Mary, and under the direction of Dr. Daniel Gutierrez, Associate Professor of Counselor Education at William & Mary, dissertation chair.

Purpose: The goal of this study is to have at least 400 individuals complete this survey which will gather information on measures of social connectedness, loneliness, drinking behaviors, and resilience. This data will be evaluated to better understand the interaction between these various constructs and how they impact LGBTQ+ college students vs. heterosexual college students.

Duration of Participation: This survey will take approximately 15 minutes to complete.

Procedures: As a participant in this study, you will complete several short questionnaires and a demographics form created by the researchers.

Confidentiality: The survey is anonymous and your participation is confidential. Please do not type your name anywhere on this survey. Your data will not be associated with your name or any Qualtrics supplied code. Your responses will not be linked to your data. Your participation will remain confidential.

Voluntary Participation: Your participation in this research is voluntary. You may choose to end your participation at any time by closing your browser or choosing not to submit the survey. There is no penalty for not taking part in this research study. Participation requires successfully completing responses to the required questions. Failure to successfully complete the questionnaire, answer questions honestly, or meet study participation criteria will result in your exclusion from this study and forfeiture of the incentive.

Incentive for Participation: Each participant who successfully completes the survey will have the chance to win a \$50.00 gift card for Amazon. If

instructions are not followed correctly, the survey will end early and you will be unable to obtain chance for randomly being selected for an incentive.

Discomforts and Risks: There are no known risks associated with this study. You will be simply asked to respond to several survey items.

Participants may also opt to receive a copy of the results after the study has been conducted.

If you have any questions regarding this study, please contact lead investigator, Nathaniel Mason by email at wnmason@email.wm.edu.

This project was found to comply with appropriate ethical standards and was approved by the College of William and Mary protection of human subjects committee (phone 757-221-3966) on 9/7/2020 and expires on 9/7/2021.

You may report any concerns or dissatisfaction with this study to Dr. Thomas Ward, the Chair of the School of Education, Protection of Human Subjects Committee by telephone (757-221-2358) or email (tjward@wm.edu).

Appendix D: SCS-R (Lee et al., 2001)

Social Connectedness Scale – Revised

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*Lee, R.M., Draper, M., & Lee, S. (2001). Social connectedness, dysfunctional interpersonal behaviors, and psychological distress: Testing a mediator model. *Journal of Counseling Psychology*, 48, 310-318.

Directions: Following are a number of statements that reflect various ways in which we view ourselves. Rate the degree to which you agree or disagree with each statement using the following scale (1 = Strongly Disagree and 6 = Strongly Agree). There is no right or wrong answer. Do not spend too much time with any one statement and do not leave any unanswered.

Strongly Disagree 1. Disagree 2 Mildly Disagree 3 Mildly Agree 4 Agree 5 Strongly Agree 6

1. I feel comfortable in the presence of strangers..... 1 2 3 4 5 6
2. I am in tune with the world..... 1 2 3 4 5 6
3. Even among my friends, there is no sense of
brother/sisterhood..... 1 2 3 4 5 6
4. I fit in well in new situations..... 1 2 3 4 5 6
5. I feel close to people..... 1 2 3 4 5 6
6. I feel disconnected from the world around me..... 1 2 3 4 5 6
7. Even around people I know, I don't feel that I really
belong. 1 2 3 4 5 6
8. I see people as friendly and approachable..... 1 2 3 4 5 6
9. I feel like an outsider..... 1 2 3 4 5 6
10. I feel understood by the people I know..... 1 2 3 4 5 6
11. I feel distant from people..... 1 2 3 4 5 6
12. I am able to relate to my peers..... 1 2 3 4 5 6
13. I have little sense of togetherness with my peers..... 1 2 3 4 5 6
14. I find myself actively involved in people's lives..... 1 2 3 4 5 6
15. I catch myself losing a sense of connectedness
with society..... 1 2 3 4 5 6
16. I am able to connect with other people..... 1 2 3 4 5 6
17. I see myself as a loner..... 1 2 3 4 5 6
18. I don't feel related to most people..... 1 2 3 4 5 6
19. My friends feel like family..... 1 2 3 4 5 6
20. I don't feel I participate with anyone or any group... 1 2 3 4 5 6

Appendix E: UCLA-R (Russell et al., 1980)

UCLA Loneliness Scale Revised

Scale:

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

1- Never 2- Rarely 3- Sometimes 4- Often

Statement

- | | |
|---|---------|
| 1. I feel in tune with the people around me | 1 2 3 4 |
| 2. I lack companionship | 1 2 3 4 |
| 3. There is no one I can turn to | 1 2 3 4 |
| 4. I do not feel alone | 1 2 3 4 |
| 5. I feel part of a group of friends | 1 2 3 4 |
| 6. I have a lot in common with the people around me | 1 2 3 4 |
| 7. I am no longer close to anyone | 1 2 3 4 |
| 8. My interests and ideas are not shared by those around me | 1 2 3 4 |
| 9. I am an outgoing person | 1 2 3 4 |
| 10. There are people I feel close to | 1 2 3 4 |
| 11. I feel left out | 1 2 3 4 |
| 12. My social relationships are superficial | 1 2 3 4 |
| 13. No one really knows me well | 1 2 3 4 |
| 14. I feel isolated from others | 1 2 3 4 |
| 15. I can find companionship when I want it | 1 2 3 4 |
| 16. There are people who really understand me | 1 2 3 4 |
| 17. I am unhappy being so withdrawn | 1 2 3 4 |
| 18. People are around me but not with me | 1 2 3 4 |
| 19. There are people I can talk to | 1 2 3 4 |
| 20. There are people I can turn to | 1 2 3 4 |

Scoring:

Items 1, 5, 6, 9, 10, 15, 16, 19, 20 are all reverse scored.

Keep scoring continuous.

Appendix F: BRS (Smith et al., 2008)

Brief Resilience Scale (BRS)

Directions: Respond to each statement below by circling one answer per row.

Strongly Disagree Disagree Neutral Agree Strongly Agree

1. I tend to bounce back quickly after hard times....
2. I have a hard time making it through stressful events...
3. It does not take me long to recover from a stressful event...
4. It is hard for me to snap back when something bad happens....
5. I usually come through difficult times with little trouble....
6. I tend to take a long time to get over set backs in life....

Appendix G: AUDIT (Daeppen et al., 2000)

The Alcohol Use Disorders Identification Test (AUDIT)
Take the AUDIT Test

1. How often do you have a drink containing alcohol?

- (0) Never (Skip to Questions 9-10)
- (1) Monthly or less
- (2) 2 to 4 times a month
- (3) 2 to 3 times a week
- (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

- (0) 1 or 2
- (1) 3 or 4
- (2) 5 or 6
- (3) 7, 8, or 9
- (4) 10 or more

3. How often do you have six or more drinks on one occasion?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- (0) Never

- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

7. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

8. How often during the last year have you had a feeling of guilt or remorse after drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

- (0) No
- (2) Yes, but not in the last year
- (4) Yes, during the last year

10. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

- (0) No
- (2) Yes, but not in the last year
- (4) Yes, during the last year

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PUBLICATIONS

Refereed publications

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Under Consideration

Mason, N., & Gutierrez, D.. (Revise and Resubmit). Integrating social connectedness in group counseling practice: A new model of recovery for gay men. *Annual Review of Addictions and Offender Counseling*.